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Railway Age

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Railway Age

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In This Issue

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

The Week at a Glance

CARLOADINGS: The March 13 total was 749 thousand, which was 24 per cent above last year and 2 per cent up from the preceding week.

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SALARIES UNDER FIRE: In the rate readjustment case, on which hearings were held before the I.C.C. in Washington this week, R. E. Webb, chairman of the Kentucky Railroad Commission, put in an exhibit of all railroad salaries over $10,000 per annum. Instead of an increase in rates, he proposed reducing these salaries to an equivalent of those paid to "other public officials." He also wants to repudiate all bond interest at rates higher than 4 per cent and to eliminate dividends of over 6 per cent.

●

INCOME BONDS AGAIN: In its proposed report on the reorganization of the Louisiana & North West, the bureau of finance of the I.C.C. has again frowned on income debentures (as it did in the A. T. & N. reorganization) with which to satisfy in part the claim of junior creditors. Instead, the bureau recommends that the contingent claim of these creditors be represented by stock. The bureau would not wipe out existing stockholders entirely, but would give them $2 in new stock for each $100 of present holdings.

●

D. & H.'S N. Y. C. STOCK: The Delaware & Hudson Company (the parent company, not the railroad) has sold some 85,000 shares of its large holdings of New York Central stock, thereby securing in part the funds by which it proposes to pay in cash a maturity on May 1 of $7,500,000 of bonds. The shares sold fetched an average price substantially double that paid for them in 1932.

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TRUCKERS HOLLER: Truck and bus operators have complained that the social security tax is an "intolerable burden" on them, since their payrolls are so high in proportion to revenue. If all the employees who build and maintain the roadways trucks use, and who control the movement of traffic were on carrier payrolls—which is the case with railroad transportation—then highway operators might really have something to complain about. The study of comparative labor standards in transportation made public last week by Mr. Eastman shows railroad payrolls far higher in proportion to revenue than is the case with their highway competitors.

●

PENSION TAX: Undersecretary Magill of the Treasury has cast doubt on the adequacy of the 2½ per cent payroll tax (rising by easy stages to 3½ per cent) by which employees and railroads are to meet the payments of the new railway pension plan. George M. Harrison and J. J. Pelley point out, however, that the rate of tax was based on careful actuarial studies made by the staff of the Railroad Retirement Board and checked by railroad and union actuaries. It is surmised that the monkey wrench tossed by the Treasury may have to be removed by Mr. Big when he returns from his Warm Springs sojourn.

●

CANADA TRANSPORT BILL: The Canadian Senate by a vote of 30 to 18 has killed the King administration's bill to change the Dominion Railway Commission into a body having jurisdiction over all transport; and to permit the railways to offer "agreed rates" (i.e., contracts with industries at below-standard rates in return for agreements to ship exclusively by rail).

●

TRUCK TRAFFIC UP: Truck traffic in February, as measured by 147 concerns reporting to the American Trucking Associations, was up 28 per cent in February this year over February, 1936. For the four weeks in February this year, the railroads reported car loadings which averaged 10½ per cent over those of last year's four February weeks.

●

HIAWATHA'S JANUARY: The Milwaukee's "Hiawatha" in January carried 30 thousand customers—35 per cent more than in January, 1936. The train last year earned about $2.50 per train-mile over and above out-of-pocket costs, or approximately $1,000,000 for the year.

●

BIG MONEY: The expenditures of one large railroad alone for fuel and materials and supplies (not counting new engines and cars) totaled 36 million dollars. That road was the Santa Fe, and how the spending of that huge sum was organized to prevent waste and assure value received for every dollar paid out is the subject of an analytical article herein. Not only buying the material, but distributing it and maintaining stocks are a part of the stores' job—the article tells how it's done.

●

HEAVIER L.C.L. CARS: In the past 5 years the C. P. R. has increased the load per l.c.l. car by over 2 tons—method used has been trucks, concentrating l.c.l. loading at fewer points than formerly, hence securing heavier lading. An article herein analyzes the plan.

●

PRICE RISE DANGER: Depressions and unemployment result when any large group of commodities are priced out of the reach of the purchasing power of other elements in the community. Labor is demanding, and industries are handing out, wage increases with a lavish hand—and letting Mr. Consumer hold the bag. But can the consumer, and the farmer in particular, keep on buying the products of industry, thus providing jobs for industrial labor, if industrial prices get beyond his reach, as they did in 1931-34? This is the theme of the leading editorial in this issue—which holds that industry and labor cannot afford in their own selfish interest to adopt policies with no regard whatsoever for their effect on general business conditions.

NEW HAVEN ENGINES: The interesting new streamlined 4-8-4 locomotives (44,000 lb. tractive force) designed to speed up the handling of Shore Line express trains between Boston and New Haven are now being delivered to the New Haven and are described in an illustrated article herein.

●

NUELLE COAL HEAD?: While attempts to secure confirmation at the office of J. H. Nuelle, president of the N. Y. O. & W., were unsuccessful up to the time of going to press, the report is widely circulated that Mr. Nuelle will resign from the O. & W. to become head of the Lehigh Coal & Navigation Co. as successor to S. D. Warriner.

●

EQUIPMENT MARKETS: Freight car inquiries held the spotlight this week when requests were afloat for bids on 5,800 cars—5,600 for the Cincinnati, New Orleans & Texas Pacific, and 200 for the Lehigh & New England. Meanwhile the Central of Georgia ordered 600 freight cars, the Youngstown & Northern four Diesel locomotives and the Canadian Pacific 30 passenger-train cars.

●

SEVEN PASSENGERS KILLED: In train accidents 7 passengers were killed in 1936, as against only one passenger life lost in such accidents in 1935. In "train service accidents," however, there was a decline in passenger fatalities—1936's total being 10, as compared with 17 in 1935. A single bus or airplane smash-up, as recent months have shown, costs more lives to passengers than all the thousands of train-miles run upon all the country's railways in an entire year.

●

CROSSING REMOVAL COSTS: Some of the reasons why interests other than the railroads should bear a large proportion of the costs of grade crossing elimination or protection are given in an address by Thomas H. MacDonald, Chief of the U. S. Public Roads Bureau, which is published in abstract herein.

●

STATES RIGHTS FOR SALE: There are two ways the federal government reduces the sphere of action of state governments—by encroachment and by purchase. The latter method is the one used in the matter of highway finance. Under a provision of the Hayden-Cartwright Act, the Bureau of Public Roads can penalize a state in the "easy money" it receives for highway construction from Uncle Sam, if the state uses gasoline levies for other than highway purposes. Thus states are induced to subordinate their sovereign powers of taxation to ideas prevalent among road building enthusiasts in the national capital. (And Maryland has recently been denied some federal aid money because it has persisted in living up to its "free state" reputation in disposing of gasoline levies as it saw fit.)

RAILWAY AGE

Will Industry and Labor Join to Halt Recovery?

Sir Josiah Stamp, the eminent British economist and president of the London, Midland & Scottish Railway, has observed in a recent book that labor appears to be more interested in achieving higher nominal wages than in higher real wages. From recent developments in industrial policy, it would seem that this unrealistic view is no monopoly of labor unions but is equally an affliction of industrial managements as well. Ordered economic progress requires some degree of rationalism on the part of those whose actions determine economic trends. If they act contrary to reason and in the direction of higher monetary incomes for themselves, regardless of the purchasing power of those incomes, then we are on the road, not toward greater wealth, but to increasing poverty.

No Prosperity With Impoverished Farmers

The outstanding characteristic of the depression from which we have been emerging has been the lack of balance between prices of the various groups of basic commodities. In "normal" times, prices of farm products, of metal goods, or transportation and electric power—are in such balance with each other that people producing each of them are making enough money so that they can buy all of each other's products. There is no "overproduction." Everybody who wants to work is working, and prosperity is general. But let the prices of one important group of producers get "out of line"—either too high or too low in relation to those of other groups—and trouble is certain to follow. The lack of balance which characterized, and to a large extent caused, the depth of the recent depression lay to a large extent between the prices of commodities produced under free competition and those which by some artificial means—monopoly control or otherwise—were prevented from fluctuating in equal measure with competitive prices. Speaking generally, it was agricultural prices which fell greatly and industrial prices which fell but moderately that constituted the lack of balance which lay at the bottom of the depression.

Under this wide discrepancy in prices, farm incomes were reduced abysmally, and as a result farmers could not purchase manufactured goods and industrial products in normal amounts at the relatively undepressed industrial price level. This reduced the market for industrial products and brought about unemployment of industrial workers. If all industry had been as freely competitive as agriculture, and if there had been no such thing as union wage contracts—then probably industrial wages (as measured in money) and industrial prices would have fallen with prices of farm products. Everybody would have earned less money than before, but money incomes would have maintained their purchasing power. *Real* wages and *real* incomes (as measured in purchasing power) would not have declined. The economic system would have continued in balance and there would have been no unemployment.

Farm Purchasing Power and Recovery

Since industrial prices and industrial wages did *not* come down to meet the low monetary level of farm incomes, the return of prosperity was delayed until forces (partly natural and partly artificial) came into play which raised farm prices back to a parity with those of other commodities. The movement of the wholesale prices of farm products in comparison with those of all other commodities is strikingly shown in the accompanying chart. With 1926 taken as 100, it is seen that the relationship of farm to other prices was a favorable one until the latter half of 1929. In the latter period the relative position of farm prices began to fall rapidly. By the second half of 1930 it had declined considerably under the level of other commodities. The unfavorable discrepancy in farm prices grew worse during the next two years, and general business conditions grew worse with it. When, at long last, in the first half of 1933, farm prices began to recover some of the lost ground, general business also registered a great recovery. This recovery was checked in the latter half of 1933 when the NRA served once more to boost industrial prices out of line with those of agricultural products. But by 1935 the harmony of agricultural prices with those of other commodities was restored—and an indispensable requisite to recovery had returned.

There are other relationships in the economic system, of course, beside that between agriculture and industry—and the fact that complete recovery has not been achieved despite the restoration of harmony between agricultural prices, on the average, and industrial prices, on the average, is ascribable to unbalanced relationships which still persist elsewhere in the economic system. Nevertheless the agriculture-industry harmony is fundamental. We can have at least a moderate

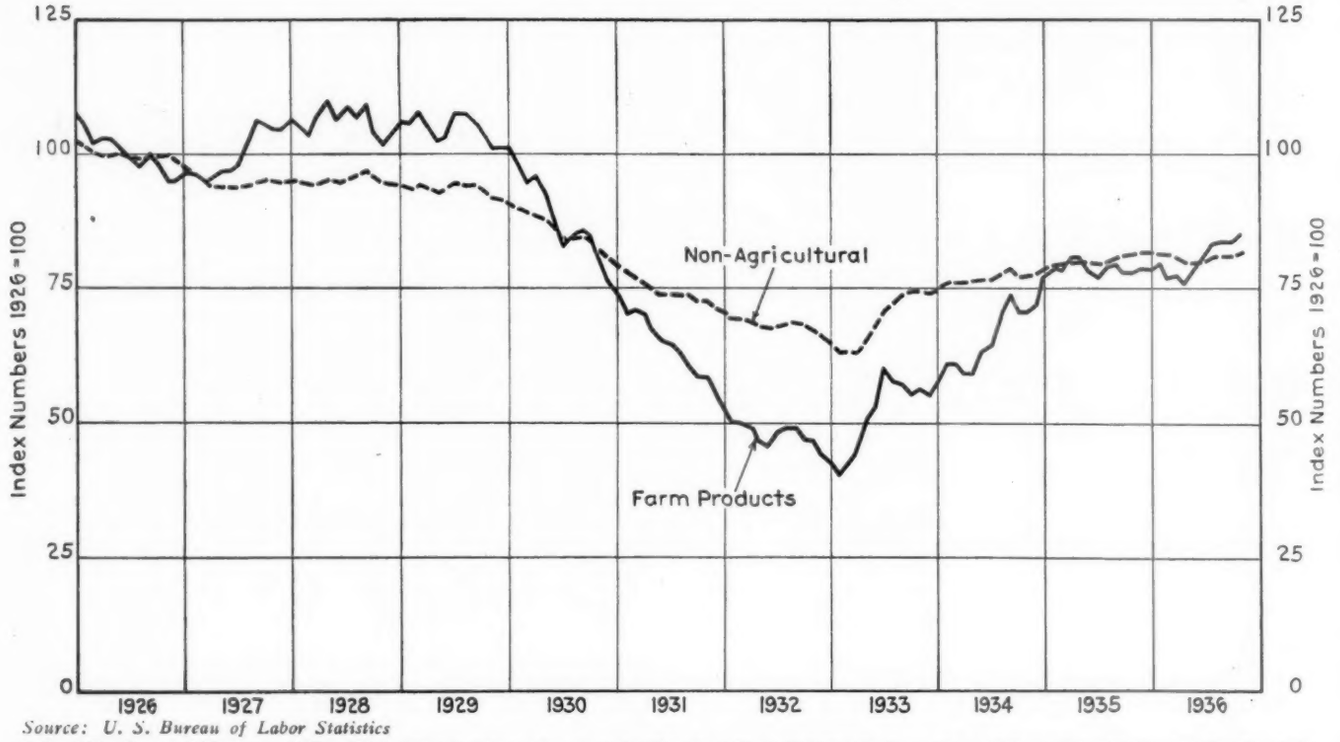
degree of prosperity and some reduction in unemployment even with some unbalance persisting in less important relationships; but when the average level of all other prices is far above that of agricultural prices, the importance of agriculture being what it is, then one of the primary requisites for a persisting normal demand for industrial products is definitely lacking.

Has Experience Taught Us Nothing?

These observations are elementary. Even a casual observer of business and economic developments in the past decade should know all about them. Nevertheless, repetition is necessary—because it is evident from recent developments that a great many leaders in politics, in labor and in industry itself have not yet learned their economic ABC's—even in the severe schooling in them which we have all undergone in the University of Hard Knocks. It is said that only a fool can learn only by experience, but that when experience itself teaches no lessons the situation is pretty desperate.

Well, desperate is the word for it when organized labor—already getting peak wages and more—secures advances in wages which are based, not on increased production per worker but actually on decreased production; and when industry passes on these prices (and then some) in increased prices to its customers. If such increases continue (there being no reliable method by which agricultural prices can be assured a parallel advance though Secretary Wallace try as he will), then are we not headed directly for such a discrepancy between agricultural and non-agricultural prices as obtained in 1931-1934, with all the grief attendant upon such discrepancy? What profit will there be in higher industrial wages and higher industrial prices if they bring about a return to the conditions of those years? And are they not certain to bring them about if wages and prices continue to be jacked up—not because of any economic justification but because arbitrary power is being ruthlessly used?

The *Railway Age* is a railroad paper and has no interest in economics or politics as such except insofar as they affect the economic welfare of the railway industry and allied interests, and the men and women who make a living by serving this industry. But it is evident that the prosperity of the railroad industry is closely linked with that of our national economic life in general. We know to our sorrow that general prosperity is no guarantee of equal prosperity for the railroads; but, even more fundamental than that, we know that there cannot even be a bare living for the railroad business when general prosperity disappears. Hence it follows that a knowledge of industrial, labor and political policies which determine the degree of national prosperity are as fundamental to successful railroading as skill in dealing with traffic, engineering, operating and mechanical problems.



Source: U. S. Bureau of Labor Statistics

Index Numbers of Farm and Non-Agricultural Prices Compared, Showing How Relatively Low Farm Prices Coincided with Depth of the Depression

Individuals Cannot Thrive By Impoverishing Each Other

In this respect the situation of the railroad industry is not essentially different from that of any other large

industry. Prosperity in textiles, in automobile manufacturing, in building, in steel, or any other legitimate industry is dependent in the long run more upon sound general economic policy than it is upon any immediate advantage which one industry or group of industries may secure at the expense of other groups. The same holds true for organized labor. Its true prosperity lies quite as much in holding wages down within limits where full employment is possible as it does in boosting up the underpaid to the point where they may provide an effective market for the products of industry and agriculture.

Unimaginative business leadership offers a striking parallel to irresponsible unionism in that neither thinks it should be disturbed either by the government or its own conscience in getting every cent it can of the total national income. Neither is concerned primarily with adding to the sum total of the national income.

If national prosperity is to be achieved, then policies which make its achievement possible must be followed by those who have the policy-making power. That power, despite encroachments by government, still lies largely in the hands of leaders of industry. To a growing extent that power is also being shared by leaders of organized labor. If business and labor refuse to consider the general welfare in the exercise of their policy-making power, is it not inevitable that such power will be taken from them; indeed, that it must be taken from them in the public interest? And the residual heir to the power of business and labor, if they fail in their trust, must inevitably be the political power. If either business or labor leadership doubts the severity or the longevity of the retribution which awaits those who, having policy-making power, fail to exercise it to the manifest welfare of the public, they have only to look at the railroads. To be sure, the retribution inflicted upon the miscreant may do society more harm than if the culprit were allowed to go scot free—but that is a consideration unlikely to dampen the public's retributive ardor, once it has been aroused.

Chairman Eccles' Words of Wisdom

Recent wage and price developments—whether industry and labor recognize their social significance or not—have observers high in government circles who do know their meaning. As Chairman Eccles of the Federal Reserve Board recently said (in part):

> It is not sound public policy and it is not in the ultimate interest of either capital, labor or agriculture for any one of the three groups, broadly speaking, to try to gain an advantage at the expense of the others which only makes for instability of the national economy and hence is bound to be temporary.
>
> Increased wages and shorter hours when they limit or actually reduce production are not at this time in the interest of the public in general or in the real interest of the workers themselves. When wage increases are passed along to the public, and particularly when industries take advantage of any existing situation to increase prices far beyond increased labor costs, such action is short-sighted and indefensible policy from every standpoint.
>
> Wage increases and shorter hours are justified and wholly desirable when they result from increasing production per capita and represent a better distribution of the profits of industry. When they retard and restrict production and cause price inflation, they result in throwing the buying power of the various groups in the entire economy out of balance, working a particular hardship upon agriculture, the unorganized workers, the recipients of fixed income and all consumers. The upward spiral of wages and prices into inflationary price levels can be as disastrous as the downward spiral of deflation. If such conditions develop, the government should intervene in the public interest by taking such action as is necessary to correct the abuses.

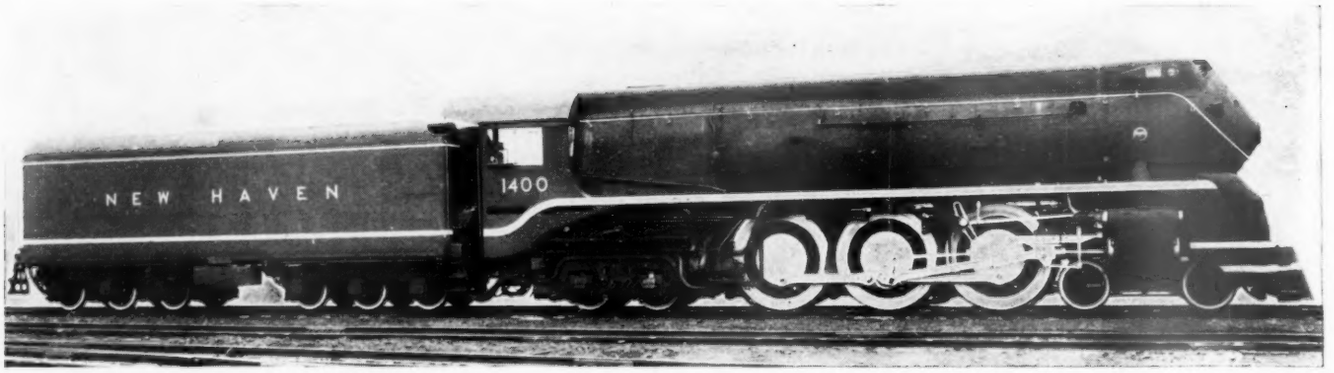
Despite the fact that the man who made those observations is high in the councils of the New Deal, in essence they are no different from the findings of the Brookings Institution. When matter-of-fact, conservative economists such as Dr. Harold G. Moulton and the leading financial authority of the New Deal administration see eye to eye on wage and industrial policy, it might be wise for industry and labor to give some heed to them.

Employee Earnings Rise

With their increased hours of service resulting from traffic improvement, the average annual earnings of railway employees in 1936 amounted to $1,734, an increase of 5 per cent over the previous year and an increase of 20 per cent over 1933. These average annual earnings per employee in 1936 exceeded the corresponding averages in every year since the termination of federal railway control, with the single exception of 1929, and fell only $10 below the average of $1,744 received in that year.

In the five years 1925-1929, inclusive, the average annual earnings of railway employees amounted to $1,685. The 1936 figure is thus $49 above the average wage paid by the railways during the period of our greatest national prosperity.

Executives, officials and staff assistants received an average of $5,565 in 1936, their aggregate compensation amounting to approximately 3½ per cent of the total railway payroll. The 167,000 professional, clerical and general employees received average wages of $1,829; the 224,000 men employed in maintenance of way work averaged $1,113; and the 296,000 employees engaged in the maintenance of equipment received an average of $1,589. The 225,000 engineers, firemen, conductors and brakemen averaged $2,359 in 1936, while the 141,000 other transportation service employees averaged $1,590. With increases both in the number of railway employees and in their average number of hours worked per year, the total railway payroll jumped from $1,644,000,000 in 1935 to $1,848,000,000 in 1936, an increase substantially in excess of half a million dollars per day.

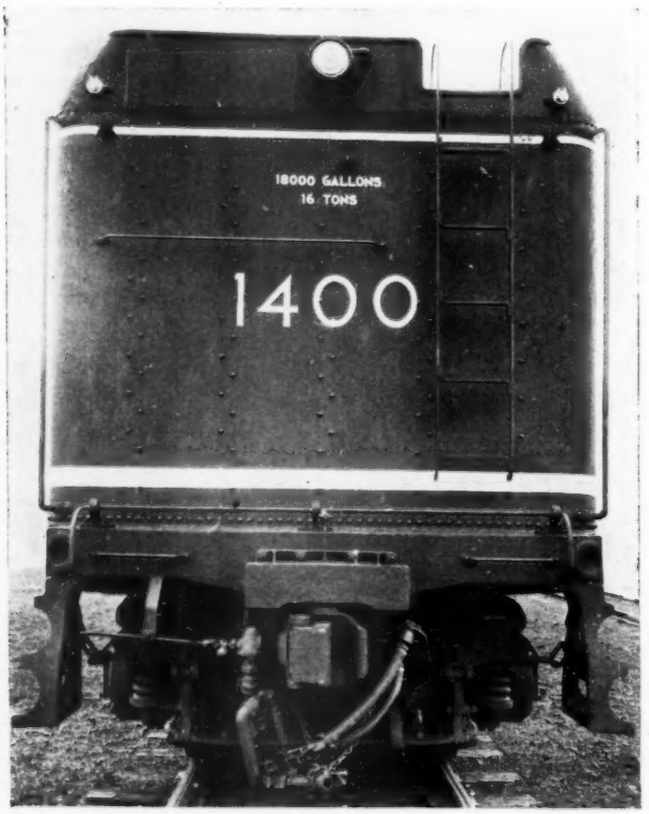


New York, New Haven & Hartford High-Speed Passenger Locomotive

New Haven Installs Streamline Passenger Locomotives

Baldwin-built 4-6-4 type have large drivers for high speed and develop 44,000 lb. tractive force

DELIVERIES of 10 streamline 4-6-4 type passenger locomotives are now being made to the New York, New Haven & Hartford by the Baldwin Locomotive Works. The first of these locomotives was formally accepted by the railroad in ceremonies held at South Station, Boston, Mass., on the afternoon of March 3 following a trip from New Haven to Boston hauling a special train for the guests of the railroad.



The Rear End of the Tender

The new locomotives, which are known on the New Haven as the Shore Line type, are designed for high-speed service and provide a capacity for handling trains of 15 cars on fast schedules. The boilers have a combined heating surface of 4,857 sq. ft. with a grate area of 77.1 sq. ft. They carry a working pressure of 285 lb. and, with cylinders 22 in. by 30 in. and driving wheels 80 in. in diameter, develop a rated tractive force of 44,000 lb.

Clean-Cut Appearance

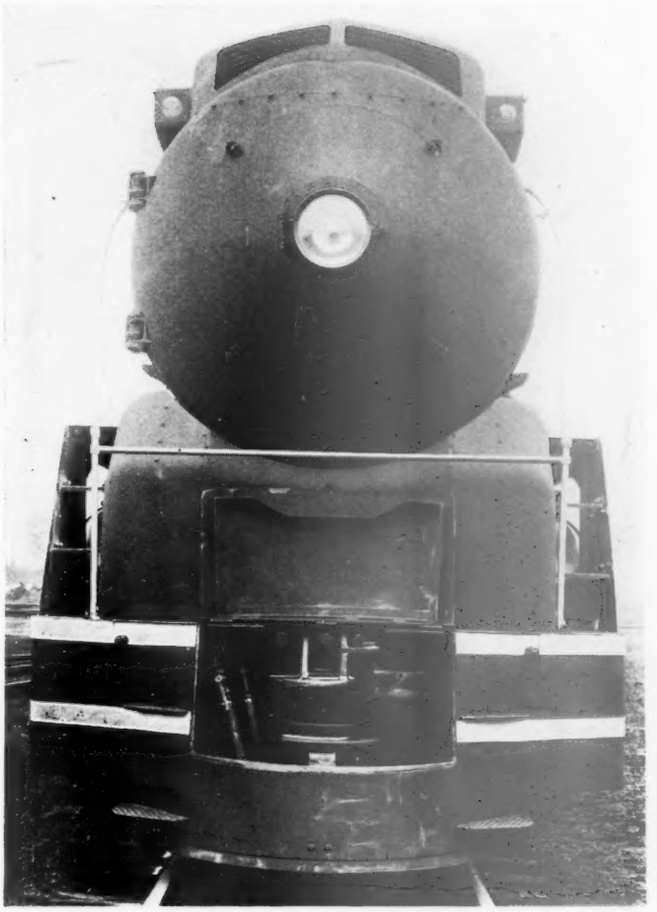
The locomotives present a clean-cut appearance. All projections above the top of the boiler are housed within a shrouding which is flush with the top of the cab at the rear and with the top of the stack at the front. The boiler front is enclosed within a conical shrouding, in the apex of which is the headlight. The space between the smokebox and the front bumper is completely enclosed, as is also the pilot. The locomotive and tender are finished in black with striping of aluminum paint or stainless-steel. The large disc centers of the Boxpok driving wheels and the rims and tires are also finished in aluminum. There is a 6-in. stainless-steel strip edging the running boards. The air-brake radiator pipes are located over the top of the engine bed so that the sides of the locomotive are free from unsightly lines.

These locomotives are of rugged design and include many modern details. The foundation is an engine-bed casting, of which the cylinders and saddle, the main reservoir and various attachment brackets are an integral part. The running gear of these locomotives consists of the Boxpok driving wheels mounted on axles of carbon-vanadium steel. The journals of five locomotives are fitted with Timken roller-bearing driving boxes and the

journals of the other five with SKF roller-bearing driving boxes. The crank pins, as well as the main and side rods, are also of carbon-vanadium steel. Advantage has been taken of the physical properties of this material in a 10-per cent increase in connecting-rod working stress over that normal for carbon steel. Floating bushings

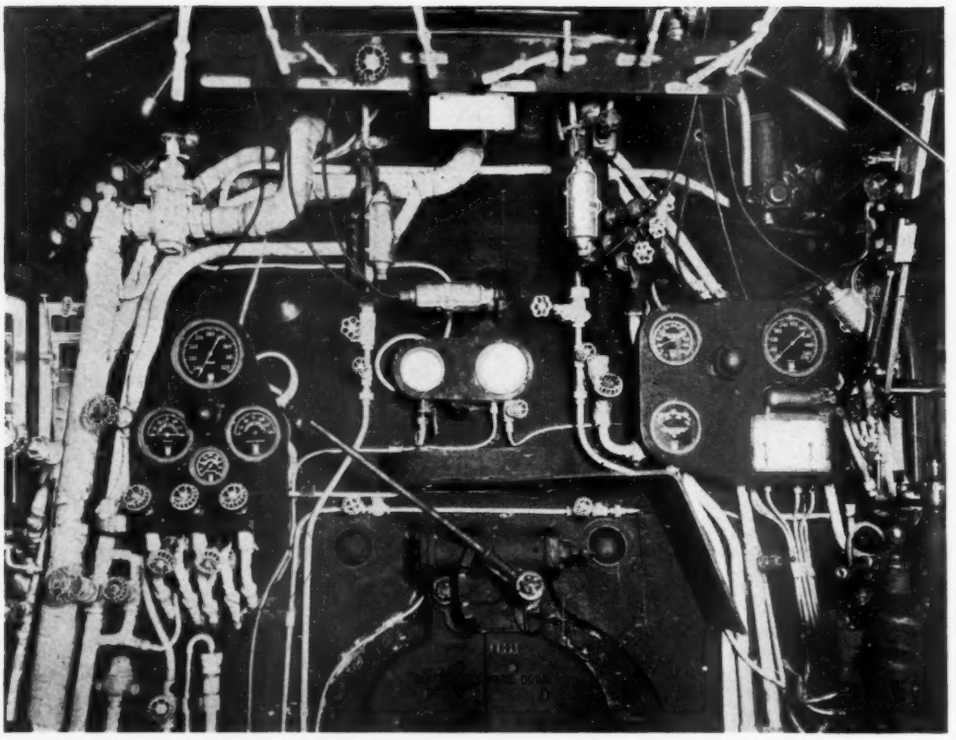
General Dimensions and Weights of the N.Y.N.H. & H. 4-6-4 Type Passenger Locomotives

Railroad	N.Y.N.H. & H.
Builder	Baldwin Locomotive Works
Type of locomotive	4-6-4 (Streamline)
Road class	1-5
Road numbers	1400-1409
Date built	1937
Service	Passenger
Rated tractive force, engine, lb.	44,000
Weights in working order, lb.:	
On drivers	193,000
On front truck	71,500
On trailing truck	100,800
Total engine	365,300
Tender	332,000
Wheel bases, ft. and in.:	
Driving	14-0
Engine total	40-1
Engine and tender total	84-10
Driving wheels, diameter outside tires, in.	80
Cylinders, number, diameter and stroke, in.	22x30
Valve gear, type	Walschaert
Valves, piston type, size, in.	11
Maximum travel, in.	7½
Boiler:	
Steam pressure, lb.	285
Diameter, first ring, inside, in.	82 7/16
Firebox length, in.	132
Firebox width, in.	84⅛
Combustion chamber length, in.	42
Thermic syphons, number	3
Tubes, number and diameter, in.	199-2¼
Flues, number and diameter, in	48-5½
Length over tube sheets, ft. and in.	18-0
Fuel	Soft coal
Stoker	Standard Type HT
Grate area, sq. ft.	77.1
Heating surfaces, sq. ft.:	
Firebox and comb. chamber	341
Syphons	139
Firebox, total	480
Tubes and flues	3,335
Evaporative total	3,815
Superheating	1,042
Combined evap. and superheat	4,857
Feedwater heater	Hancock Turbo Injector
Tender:	
Style	Water bottom
Water capacity, U. S. gal.	18,000
Fuel capacity, tons	16
Trucks	6-wheel



The Coupler is Concealed behind a Drop Door in the Pilot Housing

The Front End of the Locomotive and Sides of the Boiler Are Clean Cut in Appearance



The Cab Interior Presents an Orderly Arrangement of Piping

are fitted in the back end of the main rod and in the main side-rod connection. The outer bushings are of gun iron, with bronze inner bushings.

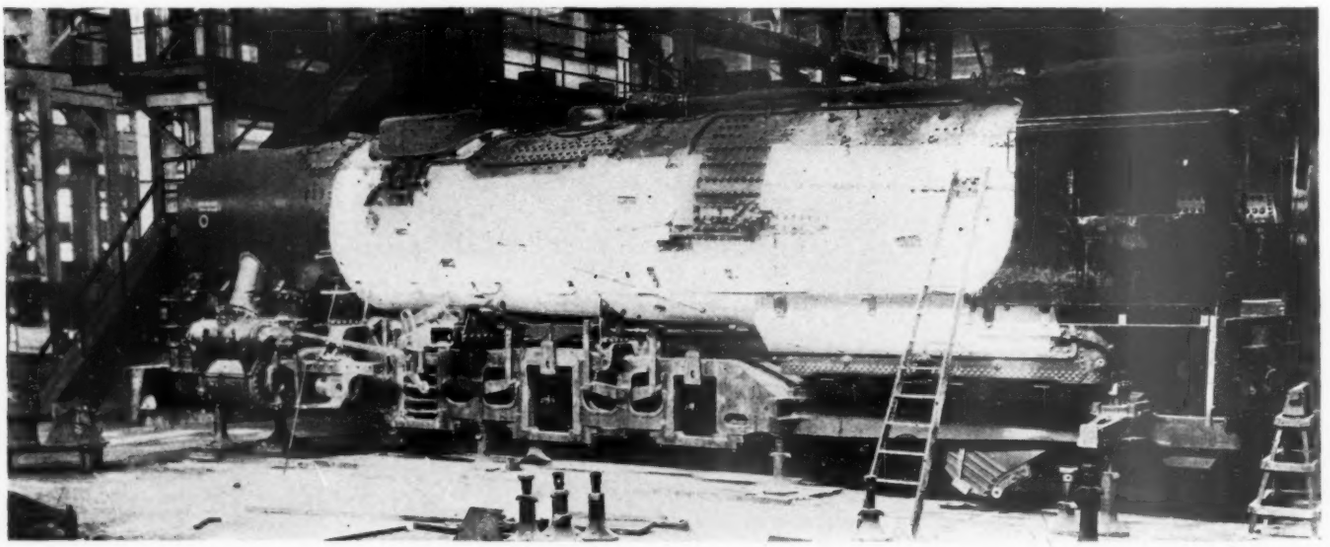
The engine and trailer trucks are General Steel Castings type. The front truck is fitted with the constant-resistance centering device. The lateral displacement has an initial resistance of 40 per cent and a constant resistance of 33⅓ per cent. This truck has inboard bearings. The trailer truck has an initial and constant lateral resistance of 15 per cent. Both trucks are fitted with American Steel Foundries roller-bearing wheel-and-axle assemblies with SKF bearings. The cylinders are an integral part of the bed casting and all cylinder heads are steel, cast separately. The piston valves are 11 in. in diameter. The rear valve chamber heads are cast steel; for front heads, however, the material is cast iron.

On five of the locomotives the pistons are of Baldwin design fitted with Hunt-Spiller gun-iron bull rings and Duplex packing rings, while on the other five locomotives the piston heads are the Locomotive Finished Material type with bronze rings. Hunt-Spiller Duplex sectional type valve rings and gun-iron valve and cylinder bushings are fitted on all of the locomotives. The single-bar guide and crosshead are of the multi-ledge type.

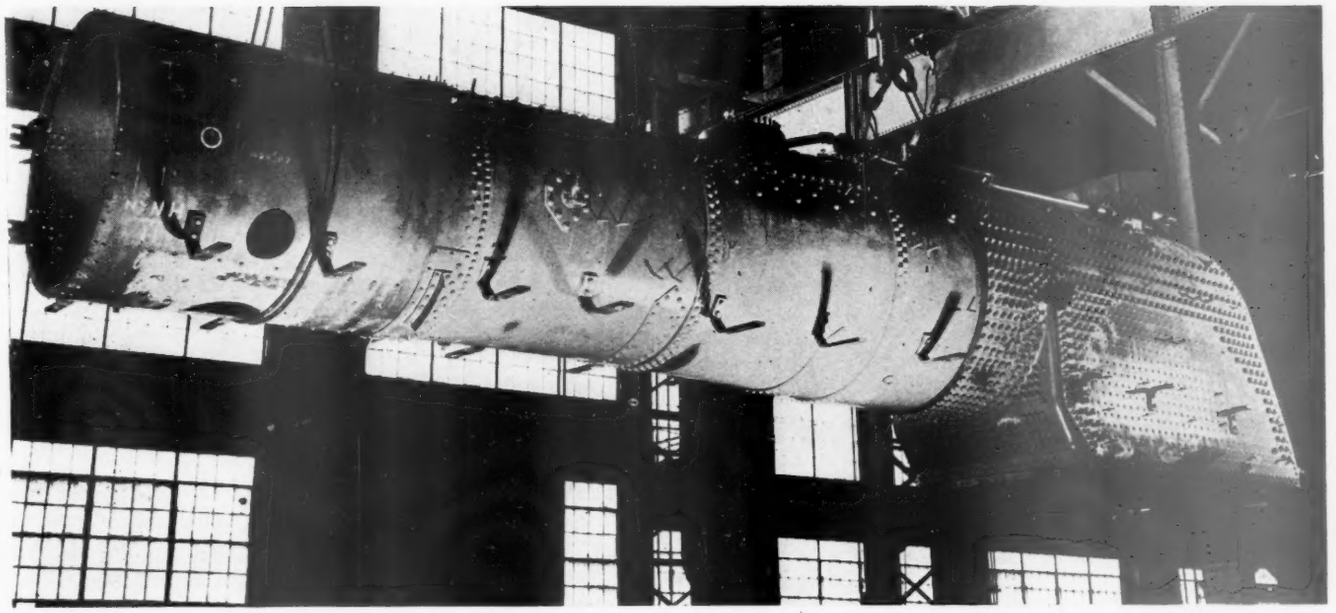
Steam distribution is effected by the Walschaert valve motion controlled by the Barco Type M-1 power reverse gear. With the small valve diameter the load on the parts is reduced to a minimum and the valve-motion presents an unusually light appearance. The link trunnions are mounted in needle type roller bearings.

The Boiler

The boiler is of the conical type and the horizontal mud ring is supported by four sliding furnace bearers. The working pressure is 285 lb., but it is designed for a



Progress in the Erecting Shops



The Boiler Ready for the Erecting Shops

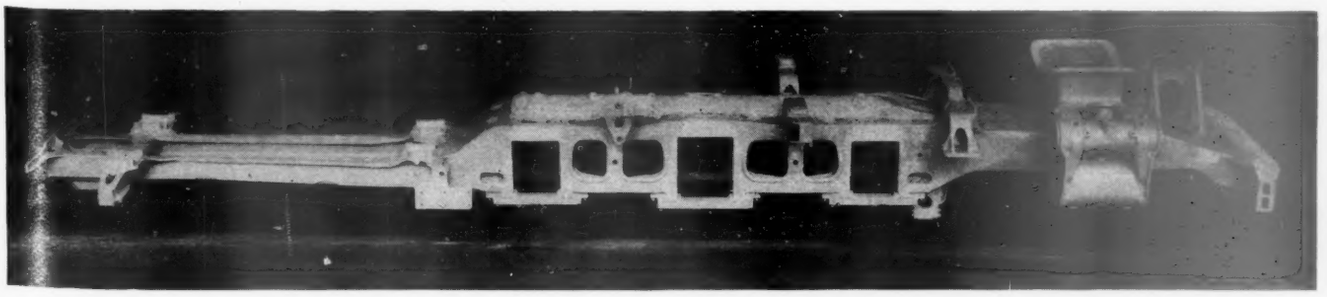
maximum working pressure of 300 lb. The barrel sheets, the wrapper sheet, the back head and throat sheet are of nickel steel. The firebox sheets are of deoxidized steel produced by the silicon-aluminum process. The firebox is 132 in. long by 84⅛ in. wide at the grate and includes a 42-in. combustion chamber. The tubes are 18 ft. long. The Type A superheater includes an American multiple throttle in the header.

The firebox sheets are completely welded. Seal welding is also employed at the mud-ring corners, at the lower ends of the vertical wrapper-sheet seams, at the ends of longitudinal barrel seams and behind pad locations. Alco flexible staybolts are applied in the breaking zones and there is a complete installation in the water space around the combustion chamber and on the throat sheet.

The firebox is fitted with Firebar grates and coal is

Partial List of Equipment and Materials on the New Haven 4-6-4 Type Passenger Locomotives

Locomotive bed	General Steel Castings Corp., Eddystone, Pa.
Miscellaneous castings	Standard Steel Works Co., Burnham, Pa.
Boiler and firebox steel	Lukens Steel Co., Coatesville, Pa.
Boiler jacket steel	Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Boiler lagging	Johns-Manville Sales Corp., New York
Shrouding over top of boiler, Diamondette floor plate	Alan Wood Steel Co., Conshohocken, Pa.
Shrouding, Streamline	Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Tubes and flues	National Tube Co., Pittsburgh, Pa.
Flexible staybolts	American Locomotive Company, New York
Rigid solid bolts	5—Ulster Iron Works, Dover, N. J. 5—Penn Iron & Steel Co., Creighton, Pa.
Washout plugs	Huron Manufacturing Co., Detroit, Mich.
Staybolt material	Ulster Iron Works, Dover, N. J.
Arch brick	American Arch Co., Inc., New York
Syphons	Locomotive Firebox Co., Chicago
Grates, Firebar	Waugh Equipment Co., New York
Ash pan	General Steel Castings Corp., Eddystone, Pa.
Superheater, Type A	Superheater Company, New York
Fire door	Franklin Railway Supply Co., New York
Stoker	Standard Stoker Co., Inc., New York
Power reverse gear, Type M-1, and reverse gear joint	Barco Manufacturing Co., Chicago
Smokebox hinges, front	Okadee Company, Chicago
Smokebox blower fitting	Barco Manufacturing Co., Chicago
Soot blower	Superior Railway Products Corp., Pittsburgh, Pa.
Blower nozzle	T-Z Railway Equipment Co., Inc., Chicago
Steam separator	Dri Steam Valve Sales Corp., New York
Steam-pipe joint rings	Hunt-Spiller Mfg. Corp., Boston, Mass.
Joint to air reservoirs	Barco Manufacturing Co., Chicago
Air-pump packing	United States Metallic Packing Co., Philadelphia, Pa.
Injectors, Turbo	Consolidated Ashcroft-Hancock Co., Inc., Bridgeport, Conn.
Blow-off cock	Okadee Company, Chicago
Low-water alarm	Barco Manufacturing Co., Chicago
Gages, Air	Ashton Valve Co., Cambridge, Mass.
Gages, Steam and water	Consolidated Ashcroft-Hancock Co., Inc., Bridgeport, Conn.
Safety valves	Consolidated Ashcroft-Hancock Co., Inc., Bridgeport, Conn.
Throttle	American Throttle Co., Inc., New York
Engine and trailer trucks	General Steel Castings Corp., Eddystone, Pa.
Driving axles	Standard Steel Works, Co., Burnham, Pa.
Driving tires	American Locomotive Company, Railway Steel Spring Division, New York



The Bed Casting

Driving-wheel centers, Boxpok	Standard Steel Works Co., Burnham, Pa.
Driving-box bearings	5—Timken Roller Bearing Co., Canton, Ohio 5—S K F Industries, Philadelphia, Pa.
Engine and trailer-truck bearings	American Steel Foundries, Chicago
Springs	American Locomotive Company, Railway Steel Spring Division, New York
Radial buffer	Franklin Railway Supply Co., New York
Draft-gear yoke	Buckeye Steel Castings Co., Columbus, Ohio
Yoke key retainer, Cooke	American Railway Products Co., Darien, Conn.
Crank pins	Standard Steel Works Co., Burnham, Pa.
Air brake	Westinghouse Air Brake Co., Wilmerding, Pa.
Driver brake	American Brake Co., St. Louis, Mo.
Brake shoes	American Brake Shoe & Foundry Co., New York
Cylinder cocks	Ardco Mfg. Co., Hoboken, N. J.
Piston rods	Standard Steel Works Co., Burnham, Pa.
Piston-rod and valve-stem packing	5—United States Metallic Packing Co., Philadelphia, Pa. 5—Paxton Mitchell Co., Omaha, Neb.
Cylinder and valve chamber bushings	Hunt-Spiller Mfg. Corp., Boston, Mass.
Combined piston bull rings and packing rings	5—Locomotive Finished Material Co., Atchison, Kan.
Piston bull rings and Duplex packing rings	5—Hunt-Spiller Mfg. Corp., Boston, Mass.
Tender tank plates, Cor-Ten steel	Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
Wrought iron coal space plates	A. M. Byers Co., Pittsburgh, Pa.
Tender underframe and trucks	General Steel Castings Corp., Eddystone, Pa.
Tender wheels	8—Standard Steel Works Co., Burnham, Pa. 2—American Steel Foundries, Chicago
Tender axles	Standard Steel Works Co., Burnham, Pa.
Tender side gearings	Edwin S. Woods & Co., Chicago
Tender-truck bearings (Isothermos)	National Malleable & Steel Casting Co., Cleveland, Ohio
Tender brakes, Simplex unit cylinder clasp	American Steel Foundries, Chicago
Tender coupler	National Malleable & Steel Casting Co., Cleveland, Ohio
Tender coupler centering device	Union Metal Products Co., Chicago
Tender draft gear, A-94-XB	W. H. Miner, Inc., Chicago
Steam and air connections between locomotive and tender	Barco Manufacturing Co., Chicago
Flexible metallic conduit for steam heat	5—Barco Manufacturing Co., Chicago 5—Vapor Car Heating Co., Inc., Chicago
Metal hose	American Metal Hose Branch of American Brass Company, Waterbury, Conn.
Lubricators, mechanical	5—Nathan Mfg. Co., New York 5—Detroit Lubricator Co., Detroit, Mich.
Grease lubrication, spring rigging, furnace bearers and engine-truck center casting and tender clasp brakes	Alemite Corp., Chicago
Running boards	Alan Wood Steel Co., Conshohocken, Pa.
Sanders	Graham-White Sander Corp., Roanoke, Va.
Headlight	Electric Service Supplies Co., Philadelphia, Pa.
Headlight generator	Pyle National Co., Chicago
Whistle	Consolidated Ashcroft-Hancock Co., Inc., Bridgeport, Conn.
Whistle operating valve	Viloco Railway Equipment Co., Chicago
Train-control equipment	5—Union Switch & Signal Co., Swissvale, Pa. 5—General Railway Signal Co., Rochester, N. Y.
Bell ringer, Instone	F. A. Barbey, 683 Atlantic Ave., Boston, Mass.
Cab seats	Gustin-Bacon Mfg. Co., Kansas City, Mo.
Cab ventilators, clear vision windows and windshields	Prime Manufacturing Co., Milwaukee, Wis.
Paint	Patterson Sargent Co., Cleveland, Ohio
Front end paint	Joseph Dixon Crucible Co., Jersey City, N. J.

fed by a Standard Type HT stoker, the engine of which is located in a compartment in the left front corner of the tender. The ash pans are of cast steel. Other boiler appliances include the Hancock Turbo-Injector, the Barco Type F4a low-water alarm and the Dri Steam steam separator.

The locomotives are fitted with the Master Mechanics' front end. The smokebox is closed with the usual type of hinged front with a central door opening. At the base of the cone, the front-end shrouding is welded continuously to the smokebox front and will swing out with it. The apex portion of the cone is a separate piece which is hinged inside and held in place by four clamps. By releasing the clamps it can be swung to one side to give access to the front-end door.

The enclosed space under the front-end conceals the 8½-in. cross-compound compressor, the bell and the heater portion of the Turbo-Injector. The coupler is hinged vertically and when swung back to one side is concealed by a hinged dropdoor in the pilot shrouding.

Back of the front end, the principal feature of the streamlining is the shrouding which encloses all of the customary projections above the top of the boiler. This is mounted above the usual boiler jacket, is 5 ft. 8 in. in width, and up to the top clearance line in height. This shrouding is built-up on a series of transverse frames of light flat sections, stiffened at the corners with gussets which are welded in place. Light angles are applied longitudinally to the under side of the sheathing. From a point about 3 ft. ahead of the cab to the rear of the smoke lifter a width of 3 ft. on the top of the housing is covered with Diamondette foot plate. Wells are provided for the safety valves, and a suitable hatch furnishes access to the sand box. In addition to the sand box this shrouding conceals the dome, the low-water alarm and the single saturated-steam turret. The smoke lifter, which completely encloses the stack, has louver openings in front and a wide horizontal slot in the top of the casing at the rear of the stack.

Each locomotive has two force-feed lubricators. On five of the locomotives Nathan DV4 20-pint lubricators are installed and on the others 24-pint Detroit Model A. The right lubricator dispenses valve oil and that on the left side is for car oil.

The five feeds from the right lubricator lead to the cylinders, steam chest and the stoker engine. Five feeds lead from the left side lubricator. Three of these lead to the driving-box pedestals, the oil being distributed to each pair of pedestals through a four-way divider; one feed, using a four-way divider, lubricates the main guides, and one feed, also through a divider, lubricates the valve-stem guides. A Westinghouse mechanical lubricator is furnished for the air compressor. Alemite lubrication is provided for the furnace bearers, front truck center casting, and the spring rigging and the brake rigging on the locomotive and tender.

The tender is built-up on a General Steel Castings water-bottom frame. This frame is arranged to furnish access to the rear of the stoker feed trough from underneath the tender.

The tender tank is of riveted construction. The principal materials of construction are Cor-Ten steel plates and structural sections of copper-bearing steel. In the coal space, however, wrought-iron plates are used.

The tender trucks are of the six-wheel type, of cast-steel construction, with 6½-in. by 12-in. journals. Isothermos journal boxes are used. The wheels are 36 in. in diameter, of rolled steel on eight tenders and cast steel on the other two tenders. The trucks are fitted with Simplex unit-cylinder clasp brakes.

The locomotives are equipped with Westinghouse No. 8ET air brakes, operating on all wheels, except the engine truck. They are also fitted with cab signals, furnished by the Union Switch & Signal Company on five locomotives and by the General Railway Signal Company on the other five.

The principal dimensions and weights are shown in the accompanying table.

Continuous Concrete Girder Structure Carries Tracks Over Three Streets at Dallas, Tex.

The Grade Crossing Problem*

An example of public co-operation with the railways in correcting a condition created by the development of highway transportation

By Thomas H. MacDonald

Chief, United States Bureau of Public Roads, Washington, D. C.

THE co-ordination of transportation in all its phases has been given the rank of both an ideal and a major objective of governmental responsibility. Much has been said concerning the ways and means of accomplishing this desirable co-ordination, but many of the policies advocated are directed toward existing conflicts and do not result in constructive effort since their foundation is in disagreements. There are so many constructive things that may be done where all transportation interests are in harmony that a more productive approach would seem to be through these, with the probability that when progress is made in these constructive phases many conflicts may automatically disappear or be materially mitigated.

Before the world went topsy-turvy and plunged civilization into a chaotic struggle where the wealth accumulated by nations was destroyed almost over-night, the normal economic developments handicapped with insupportable burdens and the natural flow of trade and commerce painstakingly built through the generations wholly upset by artificial boundaries and customs reprisals, the principle was reasonably established that where transportation costs are lowest, wages are highest. Even under conditions today this principle seems to prevail, with such exceptions as may be accounted for by influences growing out of the world conflict. If we accept this principle as ruling, all of us who have to do with transportation are given a charter that raises our efforts above the commonplace and endows them with a reflex upon the public welfare that becomes an incentive beyond the natural desire to do the day's work well. It is in this spirit that I am presenting some aspects of common interest to railway and highway transportation. It will doubtless be accepted that the more efficient transportation as a whole becomes, the greater asset the nation possesses, and the better position it occupies to compete with the world, while at the same time constantly raising the standards of living for our people generally.

There is a vast accumulation of laws, customs and attitudes of mind which are the product of the long years during which railway transportation as a nation-wide service was, in a major sense, a monopoly, and which now greatly confuse the solution of transportation problems. This point is well illustrated by the state laws and traditions governing the payment of the cost of railroad-highway grade crossing eliminations. Although there is a wide discrepancy between the legal requirements in force in the different states, it is reasonable to estimate that the average minimum assessment upon the railroads is one-half of the cost of such improvements, while protection and warning devices are wholly the expense of the railroads.

A New Concept of the Railroads

Perhaps the first major recognition by the public of the changed conditions of transportation and the realization that the railroads are an asset to be conserved, rather than a monopoly to be curbed, came with the provision in the federal highway legislation that permitted the construction costs of grade crossing improvement to be paid wholly from public funds. While it may be said that this departure from established custom grew out of the emergency necessity to provide employment of sound character, nevertheless its acceptance by the public without adverse criticism indicates the distance that public thought has traveled in its willingness to deal fairly, and as conditions now exist, with the railroads. In this, cer-

* An address presented before the American Railway Engineering Association, Chicago, on March 17.

tainly the traditions of the past have been denied by a recognition of actualities and a willingness on the part of the public to meet these fairly. If we can hold to the thought of efficient transportation in whatever form, as a national asset, the debate as to meticulous methods of assessing costs of improvements which add to the efficiency and safety of transportation, loses force. The important point to the public is that these improvements shall be made.

How much better the new plan is working is well attested by the actual results. From the time the federal highway program was established in 1916 until 1933, a period of 17 years, 6,000 grade crossings have been eliminated on the federal aid highway system, and of these 4,650 have been accomplished through the relocation of the highways.

The first authority to carry the whole construction costs of such improvements from federal funds was given in July, 1933. Under the provisions of the National Recovery Act of 1933, 697 grade separations were constructed and 706 grade crossings were protected by automatic warning devices. In 1935 funds were made available specifically for work of this character and under this authorization a total of 854 grade crossings have been eliminated, 881 eliminations are under construction and 371 are programmed for construction, a total of 2,106. In addition, 343 existing grade separation structures are being rebuilt and protection with automatic warning devices of 1,204 crossings has been accomplished or provided for. Thus in a period of 3½ years, 3,146 crossings have been eliminated, including the rebuilding and reconstruction of the 343 obsolete and dangerous crossing structures, and a total of 1,910 standard protection signals have been provided for or actually installed.

Future Possibilities

This achievement is notable in itself, but it should be of more importance that this program has brought together the railway and highway officials and engineers in a co-operative undertaking that has not only accomplished these immediate results, but has remarkably fine implications as to an intelligent and willing attack upon other problems of co-ordination in the future. Certainly the highway officials may be placed here upon record as desiring the most efficient railway transportation that can possibly be secured and are willing to devote generous efforts to this end. Planning surveys are rapidly developing the information that will not only obtain the number but will enable an adequate classification of existing railway-highway grade crossings to be made.

It is only the repetition of axiomatic knowledge common to those in the railway and highway field that we are certain to have for many years a very large number of grade crossings. That this statement may at once be understood by the public, it must be emphasized here that numerically the crossings in the lower classifications as to combined traffic importance are greatly in excess of those in the higher classifications. Upon these latter of most importance, the available improvement funds must first be used. Since so many of these crossings will be continued in service, there must be better crossing protection devices which can be installed in large numbers and which must necessarily have a low cost range. There are promising developments in this field of simple, cheaply-installed devices, in which the element of protection offered may be greatly increased over the standard cross-arm alternating light by providing in addition automatic gate arms.

In the European countries a very large number of the railway-highway intersections are at grade. Universally these are protected by gates, usually manually operated. The gates may be across the highway or across the railway, and quite generally each one seems to be in charge of a family which lives in a cottage at the site. The gates themselves are light and not strongly designed, but they have the essential quality of placing a barrier across the highway during the period of the passing of a train, and quite frequently for a considerable time before. I have had the experience in driving on a highway which intersected a railroad at frequent intervals of not being able to make sufficient time between the crossings not to be stopped at each gate, even though the freight train was being operated at a slow rate up a fairly heavy grade. Evidently the drivers on European highways accept the idea of waiting a reasonable time for the trains to cross, in contrast to the all-too-prevalent willingness in this country to risk life in a race for the crossing.

It is probably true that without significant exception

Concrete Viaduct Carries State Highway No. 28 Over U. S. Highway No. 1 and Three Tracks of Florida East Coast, North of Bunnell, Fla.

the drivers, if the decision is definitely made by interposing a gate arm between the traveled way and the tracks, will not only obey but will have a great feeling of relief that they are driving safely. The interposing of a gate is of particular importance where there is more than one track, and by proper design of reflecting lights on the gate arm the hazards of night driving are materially reduced by the barrier of warning lights across the traffic lanes.

This discussion must not be construed to temper the determination to do away with all grade crossings by elimination as a goal, but rather to make more effective the protection of crossings that we know cannot be reached for some time.

The planning surveys will serve another function of first importance by providing the data in definite form which, through careful study, will make possible the

formulation of a program of elimination of grade crossings on a scale more extensive than has yet been contemplated. The Interstate Commerce Commission reports 234,000 existing grade crossings at the end of 1935. At the rate of net elimination of the previous three years, approximately 1,200 annually, it would require 190 years to wipe out grade crossings. It is apparent that an additional attack on an extensive scale and along new lines must be undertaken. For example, take the great Mississippi river basin in which there are hundreds of thousands of miles of highways that are crossed by the railroads, many of them of trans-continental importance. All who are familiar with the number of grade crossings in this area know that it will be possible by re-arrangement and by the building of short lines of roads parallel with the railroads, to concentrate a number of crossings at one point, which will justify an under or over pass. The application of careful planning will permit the closing of a large number of these grade crossings without serious handicap to the public and, through the greater safety provided, will amply justify this course.

The President has expressed the ideal of eliminating from these fast through rail lines all hazards due to grade crossings. To accomplish this on the extensive scale desirable, we must look to the intensive planning study which will be immediately possible, since these surveys are now rapidly maturing in a large number of states. The actual possibilities inherent in a vigorous, intelligent attack on the problem of a very large number of existing crossings that is now practicable, will result in doing away with many of these crossings at a minimum of expense, provided only we can retain and extend the co-operative entente between the railway and the highway representatives.

The removal of each open crossing, however unimportant, must be a distinct gain to the railways in safety of operation for their fast trains, particularly those of the new light type, and as a corollary a decrease of hazards to the public, both for those who use the railways and for those who use the highways. The advantage to the railroads is only a concomitant to the public interest, which is the objective to be served. It may be repeated here that where this objective is accomplished, the exact division of costs becomes unimportant in both theory and in fact. Considerable attention is devoted in this paper to this problem of grade crossings which, while important in itself, becomes more important if considered as the establishment of competent working relationships between the railways and the highways.

Other Opportunities for Co-operation

In this field of planning, the grade crossing problem is only a start. When we consider the floods which have occurred during recent months in the Ohio River valley, and the interruption to transportation both rail and highway, and the cost of the rehabilitation and reconstruction of both railways and highways, it extends the field of co-operative effort for the protection of transportation and the guarding against loss due to the same recurring causes to the whole field of flood protection. We have too long regarded the protection of highways and of railways against disastrous floods as separate problems. The destruction loss is always greatest in narrow valleys where the highways and railways occupy the same limited area, and where they frequently parallel each other for long distances.

The potential field for co-operation in matters of major import extends further. One of the problems which has ever confronted railway engineers is the maintenance of a smooth track under the impact of moving loads. The distortion of our modern railroad beds under the weight and speed of heavy locomotives has demanded constant increase in the weight of rails and the cost of the remainder of the track construction. The impact is directly affected by roughness, and after roughness develops its rate of increase is accelerated. The highway engineer has been faced with the same problem, but unfortunately it is a long and difficult operation to realine and bring to true grade a roadway surface. The problem has had to be attacked from the angle of prevention, and after a long exhaustive study the influence of soils has been defined, and it may now be said that soil control has been put upon a basis approaching real mastery. This final objective is not yet quite reached but it will be and within the limitations of practicable costs. The principles developed will be applicable to the problems of the stabilization of the roadbeds under the rails as well as those under the highway surfaces.

Limitations on Federal Methods

As a comment upon some minor difficulties which have developed, it may be helpful to suggest the point of view of the public officials. In the expenditure of all public funds there are a number of principles which must be observed that do not so unequivocally apply to the expenditure of private funds. One of these is that the terms of purchase proposals must be adjusted to provide competition and to permit all those who are reasonably in a position to supply either equipment or materials, or to undertake contracts, to submit bids.

There have developed some rather highly specialized fields in equipment and materials, particularly for protective devices, in which the number of those who desire to compete is limited, and it might at this time be argued that only these are in a position to furnish the equipment or perform the services needed. This may be true, but it is necessary to fix the requirements of the proposals in such a way that they would not prevent others from coming into the field. During the short period of operations under present legislation we have had widespread methods of taking bids, between proposals which specify the items in great detail and those for which only a lump sum bid was submitted. The bureau is now engaged upon a grouping or classification of materials which will enter into the grade crossing improvements for which bids will be required in sufficient detail to disclose intelligently the unit prices, which we hope will reasonably standardize current practice.

The decision of the administration to continue the appropriations for grade crossing elimination on the same basis for the fiscal years 1938 and 1939, so far as we are able to determine, has met with universal approval. The revised rules and regulations which were issued to cover the future program, while adhering largely to those previously in effect, have endeavored to cover such changes as experience has dictated to be desirable. Minor points requiring definition are covered in the instructions issued from time to time, rather than in the rules and regulations.

Revised Basis for Division of Appropriations

There is only one point upon which it seems desirable to make comment here. In the previous programs the division of the appropriations between the railroads in each state was based upon the relative miles of main line track. A number of situations arose where it was impossible to reach important crossings because of this division of the funds. It was also evident that if the

(*Continued on page 564*)

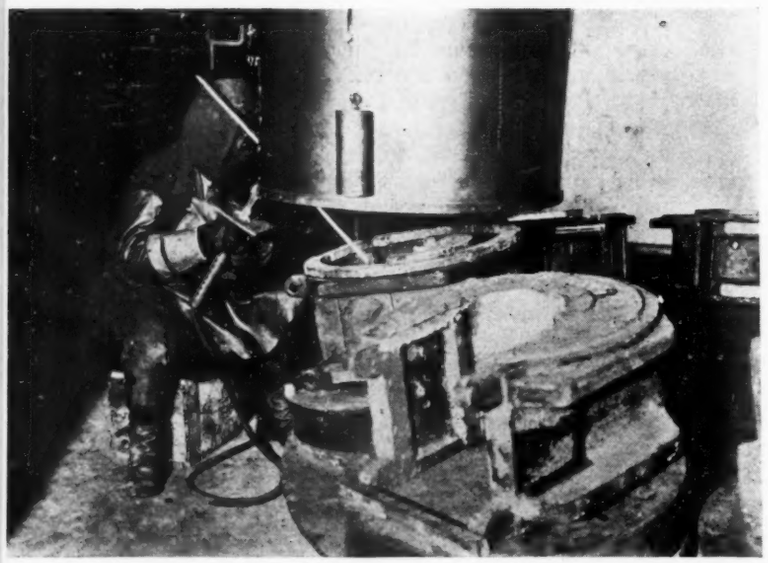
Electrical Aids to Railroad Service

A PAPER outlining recently developed electrical equipment which has proved its worth in railroad service was presented to the New York Railroad Club on Friday, March 12, by C. C. Bailey, transportation department, General Electric Company. Mr. Bailey emphasized the need for adequately meeting new forms of competition and showed how electricity is being used to meet many requirements. A part of his summary is here given pictorially.

ELECTRIC PUMPING—Simple Pre-Cast Pumping Stations (like that shown) Which Cost $6,605, Doubled the Capacity and Saved $2,945 During the First Year on the D. & H.

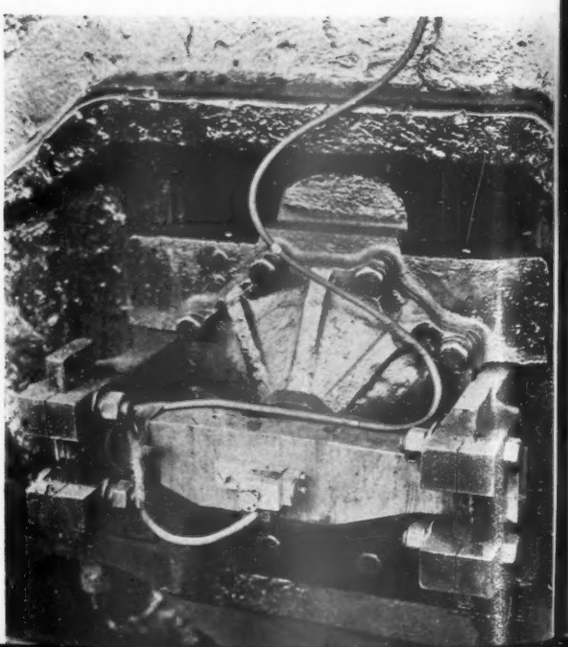
WATER COOLERS—On the Union Pacific's "Challenger" These Are Electric Water Coolers Which Have a Capacity of ½ Gal. and Which Are Operated by a 1/6-Hp. Motor—These Are Also Used for Shops and Offices

WELDED TIES—Ties Made from Scrap Rails on the Delaware & Hudson Assure Long Life to Industrial Tracks and Sidings and Leave No Long Tie Problems

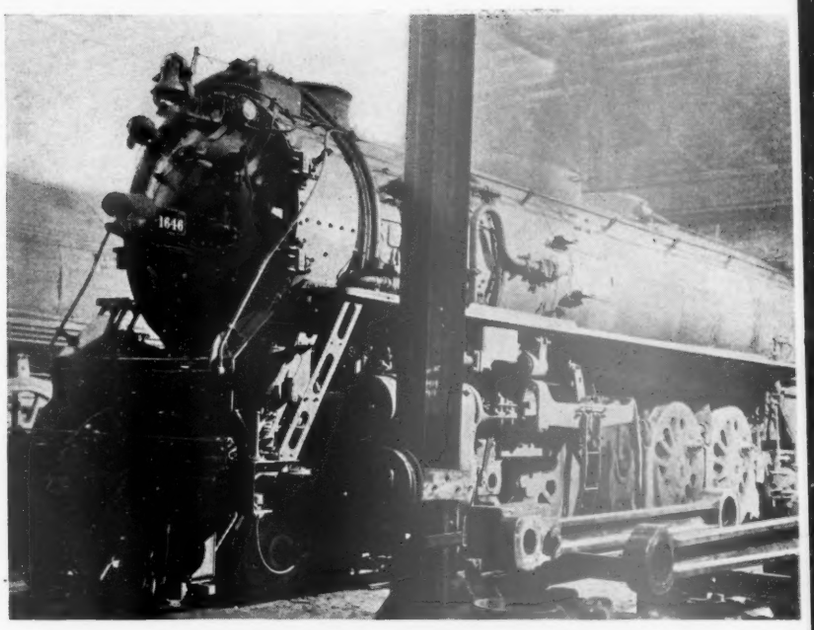


ELECTRIC WELDING—The West Albany Shops of the New York Central Are Now Using Welded-In Bronze Hub Liners which Have Given as Much as 120,000 Miles Service and Are Easy to Rebuild

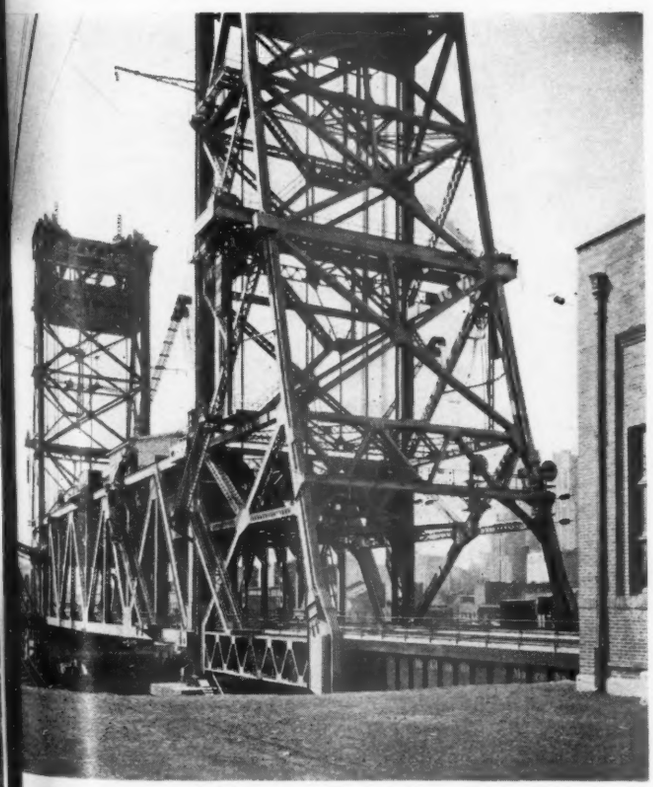
ELECTRIC STRAIN GAGES—Tiny Strain Gages Placed on Journal Boxes Can Be Used to Determine Exactly What Forces the Locomotive Exerts Upon the Track



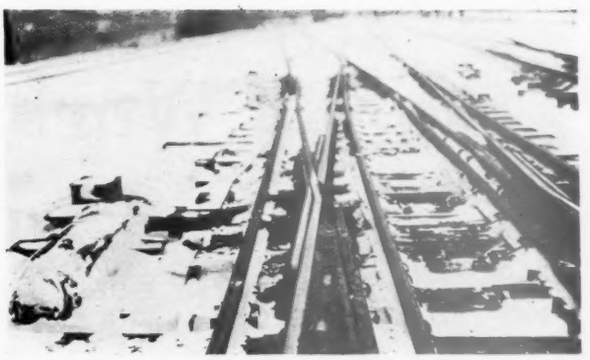
MACHINE TOOLS—The Reading Replaced 49 Old Machine Tools with 32 Electrically-Driven and Controlled New Ones, and Realized a 27 Per Cent Reduction in Locomotive Shop Time and 24 Per Cent Reduction in Repair Cost, Even when Operating at 40 Per Cent Capacity



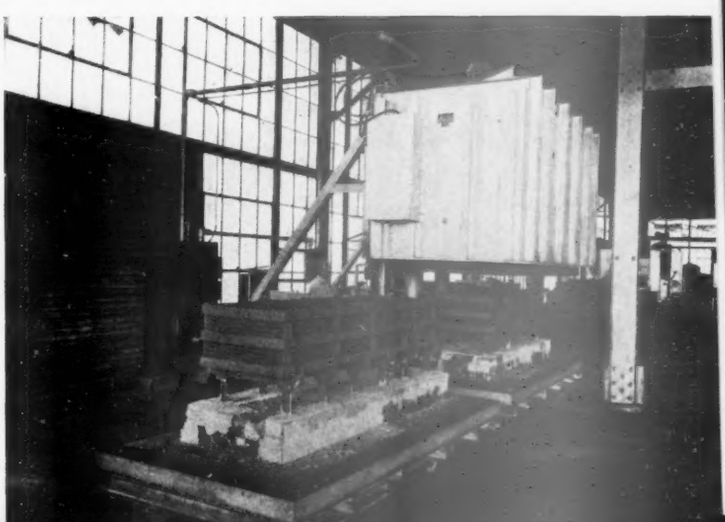
LIGHTING—Floodlights in a Lackawanna Shop Put the Light Where It Is Wanted when It Is Needed



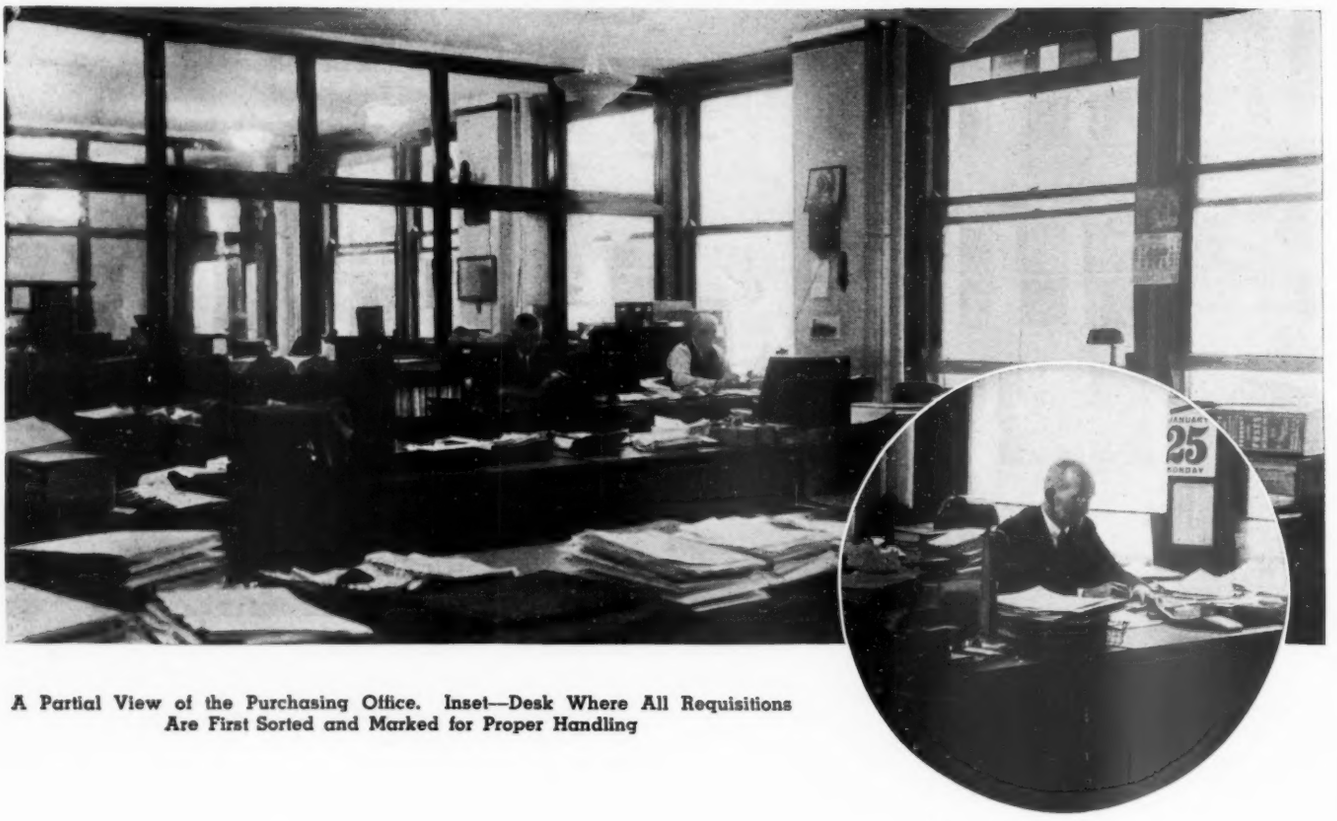
ELECTRIC BRIDGE OPERATION — The Three-Track Lift Span on the Pennsylvania's Bridge at Newark Weighs 2,100 Tons and Is Lifted 111 Ft. at the Rate of 2 Ft. Per Second—Five Sources of Power and Duplicate Motors Assure its Operation



SNOW MELTING—Electric Heaters at Switch Locations Kept Switches in Operation in a Large Terminal during a 52-Hr. Storm, at a Cost of $411 for Power and $15 for Labor



HEAT TREATING—A 105-Kw. Electric Furnace Assures the Quality of Locomotive Springs on the Missouri Pacific



A Partial View of the Purchasing Office. Inset—Desk Where All Requisitions Are First Sorted and Marked for Proper Handling

Supply Work Highly Organized on Santa Fe

1,700-man army busy with infinite details of purchasing and stores — Discounts for cash pay $130,000 a year

Part I

A STUDY of the operations of the purchasing and stores department of the Atchison, Topeka & Santa Fe system gives an exceptional view of the magnitude and variety of the work of supplying a large railroad with the materials and equipment required for its operation, maintenance and improvement. Some of the methods differ from those in effect on other roads and the work does not include all details known to railway supply operations, but it is unusual to find a carrier where the supply work is so completely departmentalized and so highly organized.

A Large Buyer

The Santa Fe, with more than 13,000 mi. of railroad in operation, is one of the largest railroad buyers in the country. Purchases of fuel and materials and supplies in 1936 totaled $35,900,000, not counting new locomotives and cars. These purchases included $4,051,000 for coal, approximately $9,217,000 for fuel oil, $1,627,000 for ties, $1,105,000 for other products of forests, $2,276,000 for rail, $6,800,000 for other products of iron and steel, over $1,400,000 for non-ferrous materials, and over $8,800,000 for other miscellaneous materials. The purchases were made from 3,500 companies located in more than 240 towns and cities in 32 states.

The purchases range from pins and tacks to locomotives and complicated appliances for locomotives, power plants and shops. They include many drugs, varieties of paints and oils, articles of rubber and leather, ice for cars and feed for cattle. Furniture, fabrics and an occasional piano appear in its purchases. Recently, the

Where Santa Fe Purchases Go*

	Companies	Towns	States
Materials	626	170	27
Printing	78	17	9
Forest products	53	35	11
Fuel	71	40	13
Total (without duplication)	828	239	32

* Restricted to companies receiving orders of $500 or more in one year.

Santa Fe purchased some goats, a mule and a shepherd dog; and the purchases extend to buses and other requirements of subsidiary companies. Its consumption of materials, as distinguished from purchases, include the materials produced at a reclamation plant, which would have cost more than $500,000 if purchased new.

69,000 Varieties

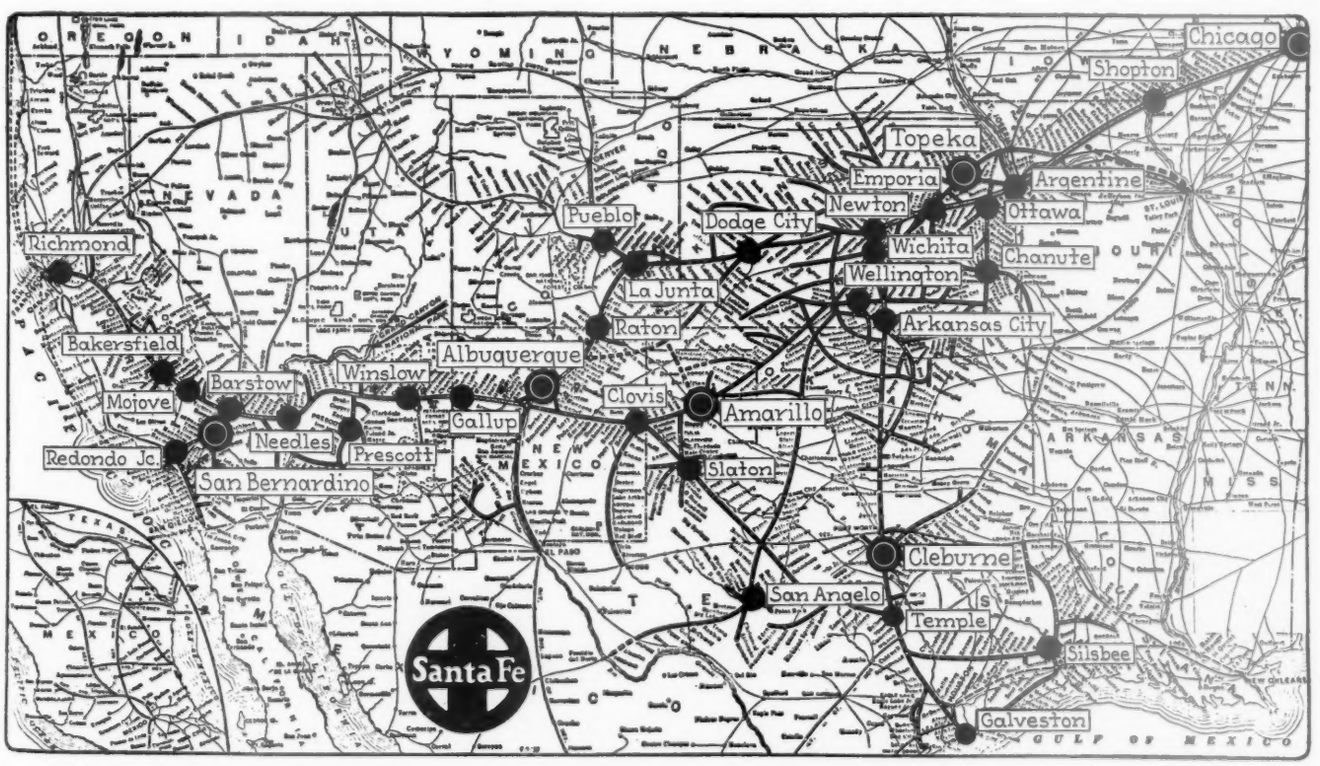
Items of material standard to stock number 69,000, and material in stock on December 31, 1936, was valued at approximately $17,000,000, including $2,257,000 of fuel, $5,000,000 of crossties and other materials at treating plants, $2,311,000 of new and old rail and $7,375,000 of miscellaneous materials. Sales of scrap iron and steel in 1936 totaled 113,454 net tons, producing an income of approximately $1,501,874. The wide variety of materials used by the railroad is graphically shown in a partial list of the commodities received by it from supply firms in 1935.

What the Santa Fe Buys—Typical Commodities Purchased

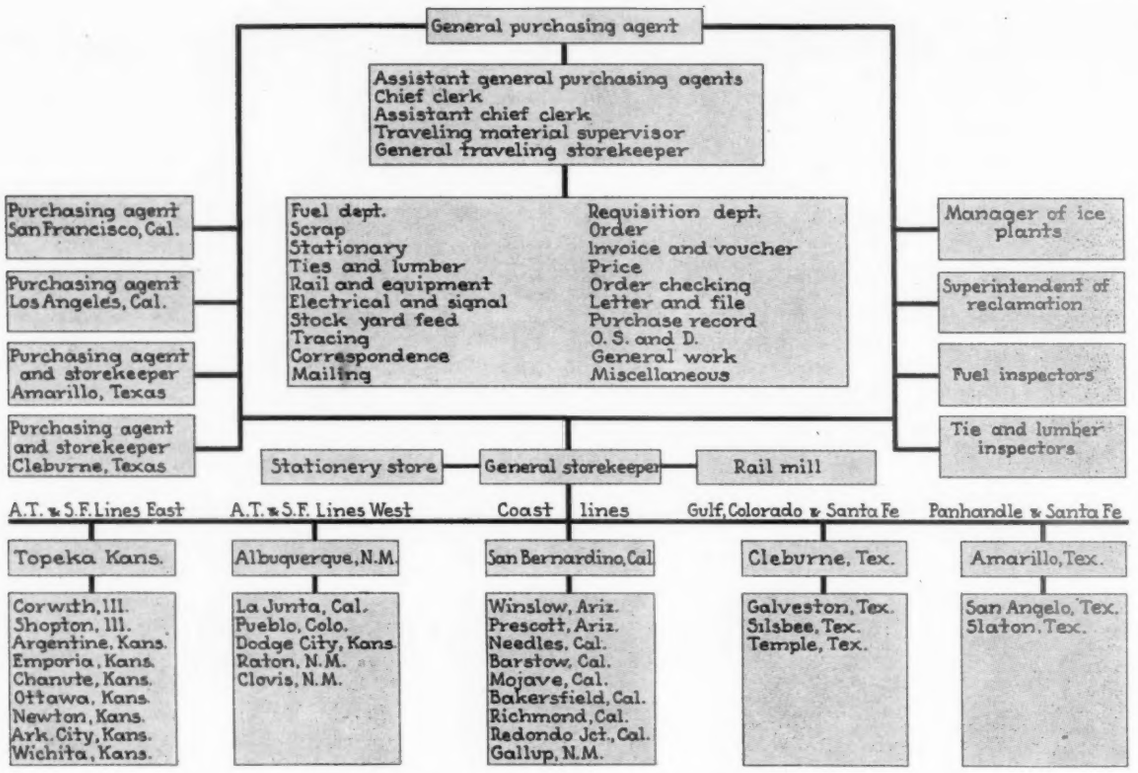
Acid
Air brake material
Anchors, rail
Automobiles and parts
Axles
Bags, burlap
Batteries, storage, and parts
Batteries, flashlight
Batteries, hand lantern
Beams, brake, and parts
Bearings
Board, cork
Boilers and parts
Bolsters, truck
Bolts
Boxes, journal
Brakes
Brick, fire
Bridge and subway material
Brooms
Brushes
Burners, gas, weed, oil
Cans, ice
Car parts, gas-electric motor
Car parts, inspection, motor
Car heating material
Car parts, air conditioning and lighting
Car fixtures, passenger
Car parts, refrigerator
Castings, brass
Castings, grey iron
Castings, malleable
Castings, steel
Cement
Chemical, weed killer
Chucks and parts
Cloth
Compound, boiler
Couplers, car
Covering, pipe
Cranes and parts
Distillate
Doors, freight car, and parts
Drills
Duck, canvas
Electrical material
Enamel
Fencing, woven wire
Ferrules, copper
Files
Forks, ballast
Frogs, rail
Furniture, miscellaneous
Fusees
Gasoline
Gears, draft, and parts
Generators and parts
Glass
Goggles and parts
Gravel
Grease
Handles
Headlight parts
Hose
Hydrants and parts
Injectors and parts
Insulation
Iron, engine and staybolt
Jacks and parts
Joints, flexible
Joints, rail
Lacquer
Lagging, boiler
Lamps, electric
Lanterns, electric
Lathes and parts
Lime
Linen
Loaders, auto
Locks, signal, etc.
Locomotive repair parts
Lubricants, miscellaneous
Lubricators and parts
Machinery and parts
Meters, miscellaneous
Nails
Nuts
Oil, petroleum and lard
Oil, linseed
Oil, creosote
Packing, miscellaneous
Paint
Pedestals, car
Pins, crank
Pipe, cast iron
Pipe, copper
Pipe, corrugated
Pipe, steel
Pipe, vitrified
Pipe, brass, and fittings
Pipe, wrought iron, and fittings
Plates, tie
Plugs, tie
Plugs, wash and grease
Plush
Pumps and parts
Rags, white
Reamers
Rivets
Rods, piston
Roofs, car
Roofing, prepared
Rope, wire
Salt
Sand
Sanders and parts
Saws
Scales
Screen
Screws, iron, wood, machine, etc.
Seals, car
Shoes, brake
Shovels
Signal materials
Soap
Sodium, aluminate
Soda, ash
Soda, caustic
Solder, miscellaneous
Spikes, track
Splice, angle bars
Spreader, ballast, and parts
Springs
Stands, switch
Steel, bars, sheet and plate
Stokers and parts
Stone
Strips, weather
Switch and frog parts
Tape
Taps, miscellaneous
Telegraph, mult. printer
Tinware
Tires, steel
Tools, pneumatic
Tools, miscellaneous
Tractors and trucks and parts
Tubes, loco. boiler
Tubes, stationery boiler
Tubes, superheater
Tubing, copper
Tubing, steel
Turbines and parts
Turnbuckles
Turntables and parts
Unions, pipe
Valves, brass and iron
Varnish
Washers
Waste, cotton
Welding material
Wheels, abrasive
Wheels, cast iron
Wheels, steel
Wire, copper, and cable
Wire, annealed iron and galv.
Wire, bond
Wire, electric welding
Wrenches and parts

Supply Work Extensive

Material inspection, other than the inspection of fuel, lumber and ties, is performed by or under the direction of the mechanical and engineering departments, and the



Route of Santa Fe Showing Locations of Stores—Large Dots Designate General Stores, Small Dots, Local or Special Stores



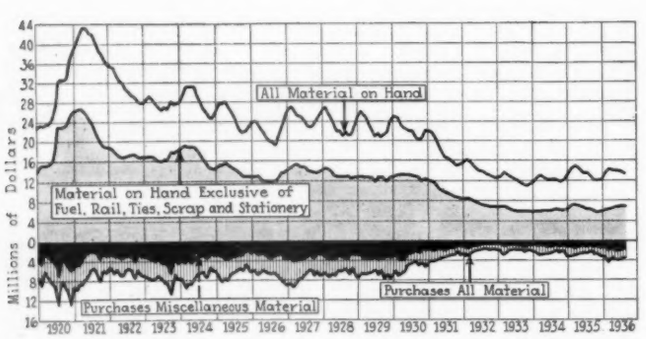
An Organization Chart of the Purchasing and Stores Departments

company's timber treating plants are operated by the engineering department, while supplies for hotels, restaurants, and dining cars are provided by the Harvey system. With these principal exceptions, practically all of the supply work is performed and carried to completion by the purchasing and stores department under the direction of a general purchasing agent reporting to the president.

The general purchasing agent has charge of the purchasing of all materials and supplies required for construction and for maintenance and operation. He is responsible for the distribution and conservation of materials and supplies, for keeping accurate records of their receipt, distribution and use, for the sale of all scrap and obsolete material and equipment, and for the reclamation of material. He has under his charge ice plants to manufacture and distribute ice for cars in California, Arizona, and Colorado. His staff includes assistant general purchasing agents in the main office, two local purchasing agents in California, and local purchasing agents on two subsidiary lines in Texas, a general storekeeper with a corps of local storekeepers at all distributing stores, a general superintendent in charge of a large reclamation plant at Corwith, Ill., and a manager of ice plants, assisted by a corps of ice plant superintendents.

The jurisdiction of the department extends to the purchasing and inspection of all coal and fuel oil and the purchasing, inspection and handling of ties and lumber. It includes the purchasing of all stationery and the repair of office appliances, and performs all accounting work for materials and the preparation of all vouchers for bills rendered on the railroad for materials purchased, subject only to the audit by the accounting department.

At present, the purchasing and stores organization, exclusive of the icing plant division, employs 1,667 persons. In the purchasing department are 72 employees, including 63 in Chicago, 6 in Los Angeles and 3 in San Francisco, exclusive of inspectors. The field inspectors of fuel and lumber and ties number 34. The other 1,595 employees are stores department forces, including a supervisory force of 61, an office force of 251, a warehouse and yards force of 940, a stationery force of 19, a rail mill force of 48, and a reclamation plant force of 276.



Monthly Trend of Santa Fe Inventories and Purchases, 1920-1936

Storekeeping Organization Large

The large amount of work performed by the store department in supplying the Santa Fe system with materials and guarding against waste in its various operations is indicated by the number of officers and employees of different kinds in that branch of work. The supervisory force includes, besides the general storekeeper, 6 traveling storekeepers, 28 division storekeepers and 14 local storekeepers. The office force includes 27 chief clerks, 7 assistant chief clerks, 37 stenographers and 179 clerks, while the warehouse and material yard forces of the store department include 13 general and assistant foremen, 67 foremen, 54 stockmen, 16 supply car men, 11 watchmen, 8 janitors, 2 elevator operators, 21 locomotive crane engineers and firemen and helpers, 67

chauffeurs for automobiles and tractors, 30 gang leaders, 4 coopers, 175 truckers and 465 store helpers and laborers. This does not count the forces in the stationery stores, in the rail mill, nor in the reclamation plant, which include 2 printers and 53 mechanics. The variety and distribution of the personnel is shown in further detail in the accompanying table.

Store Department and Reclamation Plant Personnel by Class of Employees System Lines—October, 1936

	Office	Warehouse	Stationery*	Scrap and Reclamation*	Total
Storekeepers	3				3
Gen. traveling storekeepers	1				1
Traveling storekeepers	5				5
System accountant	1				1
Gen. lumber supervisor	1				1
Material supervisors	4				4
Gen. supply car storekeeper	1				1
Stationer	1				1
Supt. reclamation plant	1				1
Supt. rail mill	1				1
Division storekeepers	28				28
Local storekeepers	14				14
Chief clerks	27				27
Asst. chief clerks	7				7
Acct. reclamation plant	1				1
Stenographers	37				37
Clerks	179				179
General foremen		10	1	3	14
Asst. general foremen		3			3
Foremen		67	1	6	74
Stockmen		54			54
Supply car storekeepers		4			4
Supply car helpers		12			12
Watchmen		11		5	16
Janitors		8	1	1	10
Elevator operators		2			2
Electric crane operators		2			2
Loco. crane engineers		14		3	17
Loco. crane helpers		7			7
Cranemen				2	2
Chauffeurs		67		2	69
Gangleaders		30		2	32
Storehelpers		103	13	1	117
Coopers (grain door yard)		4			4
Truckers		175			175
Laborers		362		103	465
Machine helpers		1		72	73
Printers			2		2
Baler			1		1
Plant engineer				1	1
Inspector				1	1
Mechanics		4		53	57
Lead workmen				7	7
Stationary engineers				3	3
Stationary firemen				5	5
Other plant employees				54	54
	312	940	19	324	1,595

* Clerks under office.

The total payroll in 1936 for the officers and men engaged in store department work on the system was $2,303,158, of which $1,178,328 represented the payroll of the lines East; $381,737, the payroll of the lines West; $181,885, the Gulf, Colorado & Santa Fe; $58,577, the Panhandle & Santa Fe; and $76,651 for operating the system rail mill at Newton, Kans.; $388,930 for operating the system reclamation plant at Corwith, Ill.; and $37,050 for the stationery department.

The purchasing department, exclusive of 24 coal, oil and lumber inspectors, includes, besides the general purchasing agent and two assistant general purchasing agents at Chicago, a chief clerk, an assistant chief clerk, a traveling representative, a stationery buyer, 4 head clerks, 36 clerks, 7 stenographers, 2 stenographer-clerks, 4 typists and 2 junior clerks and 1 office boy, while the total purchasing payroll of the system was approximately $282,488 in 1936, including an office payroll of $175,567 and an inspection payroll of $74,881. Of this total, approximately $250,448 was allocated to Chicago where the main office is located, $22,887 to Los Angeles and $9,153 to San Francisco.

Purchasing Organization

Approximately 11 sub-departments are maintained in the main purchasing office to perform all the detail connected with the purchasing work. The fuel department is one of the largest subdivisions and maintains a separate office. Here 5 clerks, each familiar with calculating machines and working under the direction of a head fuel clerk, keep a separate invoice record of all fuel purchased and maintain general supervision over all shipments of fuel and current requirements. The fuel inspectors report to this department. Because of the special nature of its work, the fuel division of the purchasing department is practically a self-contained division in that it performs all detail office work arising out of the fuel buying.

Another sub-department, largely self-contained, is the scrap and old material division. Here one clerk and a stenographer-clerk handle all work in connection with the shipping and sale of scrap material, obtain bids from scrap dealers, and write orders for the sale of the material. The division keeps complete records of the sale prices and shipments of scrap.

The stationery department is another special division, largely self-contained. In this department, which occupies a separate office, a stationery buyer, assisted by two clerks and a stenographer, interviews salesmen, obtains prices on stationery and office supplies, prepares contracts and purchase orders for the approval of the general purchasing agent, and approves all invoices for this class of material. The department maintains a record of all items purchased for and carried in the railroad stationery account, and maintains a record of all office appliances used in all departments of the railroad and arranges for their repair.

Another special sub-department is the tie and lumber division, where a chief lumber clerk, with three assistants, sends out bids on all lumber and ties, tabulates the prices, prepares purchase orders and performs all routine work incident to the purchasing of ties and lumber, including the keeping of records on all deliveries of this material.

The purchasing organization also includes the rail and equipment department, composed of two clerks who obtain and tabulate all quotations for new rail and fastenings and for new equipment, prepare the orders and check the invoices and look after the delivery of these materials.

The purchasing department also maintains a special stock yard and feed department where one clerk obtains and tabulates all bids, prepares orders and handles almost all other details connected with hay and grain for the many feed yards maintained by the railroad. This sub-department, like the fuel, lumber, rail and stationery departments, is largely self-contained because of the specialized nature of its work.

The clearing house of the purchasing department is the requisition department where one head clerk and two assistants receive all requisitions, refer them to the proper sub-departments preliminary to sending out inquiries for prices, and mark the requisitions with proper notations for the issuance of purchase orders after inquiries for prices have been returned and the suppliers of the materials are determined. The requisition department also prepares all details in connection with the procuring and tabulating of monthly prices of 500 or more designated items of material and maintains a visible card record of all contracts. It also maintains a card record of approximately 1,500 live patterns from which castings are made, and maintains a file of trade catalogues.

Auxiliary to the requisition department is an order department where one clerk with two typists assigns order numbers to all requisitions not referred to special departments and performs all the routine work in connection with the typing of purchase orders. This sub-department also prepares all special and telegraph orders.

A price desk is also maintained where one clerk keeps a visible card record of prices and a record of author-

ized freight rate schedules, and with these records verifies all invoices. Another clerk checks all invoices against orders and posts quantities shipped on file copies of the purchase orders.

A special department, composed of one head clerk and four assistants, is also maintained in the purchasing department to verify all invoices for miscellaneous materials except lumber, arrange for the correction of errors and prepare vouchers in payment of the purchases made. This department keeps an invoice record in which all bills received from firms are entered.

Other divisions of the work include a sub-department specializing on the handling of requisitions for electrical and signal material, a desk which maintains a delivery record of several hundred selected items of material, another desk where a record is prepared of all closed files before they are stored, and still another desk handling all claims for short and damaged materials and keeping records of drums, cylinders, empty containers and cement sacks returned to shippers. A tracing department polices the files for all unfilled orders, and traces for all storehouse materials except lumber, ties, stationery and fuel.

Over 200,000 Documents A Year

During 1936, the purchasing department handled 32,404 requisitions, including 250 for fuel, 712 for lumber, 2,225 for stationery and 29,217 for miscellaneous materials. The purchase orders numbered 69,057, including 794 for fuel, 980 for lumber, 10,341 for stationery, and 56,942 for miscellaneous material. It also handled approximately 116,578 invoices, including 83,345 invoices for general material, 16,317 for stationery, 7,065 for lumber and 9,851 for fuel. It prepared approximately 38,976 vouchers, including 2,041 for fuel and 3,358 for stationery. This is equivalent to handling approximately 257,000 basic documents. A daily average of 108 requisitions, 230 orders, 389 invoices and 130 vouchers was equivalent to 1.69 invoices per purchase order and 2.99 invoices per voucher. Inquiries issued in 1936 numbered approximately 46,662, including 4,970 for lumber prices, 6,817 for stationery prices and 34,875 for general material prices. In addition, the department handled approximately 62,118 letters, 38,250 telegrams, 16,625 files and 2,747 scrap bills.

Total purchases, including fuel, in 1936, averaged $308 per invoice, while the payroll cost of the purchasing department (excluding inspection and stores) averaged $4.88 per $1,000 of purchases and $0.68 per requisition, order, invoice and voucher handled. Of the 39,000 vouchers prepared, approximately 19,500, or 50 per cent of the total, were made as soon as the invoice and waybills were received, but before the receipt of the materials by the stores department. This was done to obtain deductions allowed by supply firms for the prompt payment of invoices, verification being subsequently made by the store department. These deductions from purchase bills total approximately $130,000 a year, which is more than the entire cost of maintaining the voucher and invoice department and is almost half the total cost of the purchasing office.

To be continued in a later issue.

Documents Prepared or Handled—1936

	Fuel	Lumber	Stationery	Miscellaneous	Total
Requisitions	250	712	2,225	29,217	32,404
Orders	794	980	10,341	56,942	69,057
Invoices	9,851	7,065	16,317	83,345	116,578
Vouchers	2,041	See misc.	3,358	33,577	38,976
Inquiries	....	49,704	6,817	34,875	46,662
Letters	....	....	....	....	62,118
Telegrams	....	....	....	....	38,250
Files	....	....	....	....	16,625

Annual Report of Pullman, Inc.

THE annual report of Pullman, Inc., for 1936 shows net earnings of $6,347,107, after all charges and taxes, including provision of $69,272 for federal surtax on undistributed profits, as contrasted with a net loss of $273,728 in 1935. After provision for dividends paid and for additions to equipment and property, the consolidated working capital stood at $57,908,772, as compared with $49,214,130 at the end of 1935. Current assets at the end of the year amounted to $73,212,031, as compared with $60,410,928 at the end of 1935, while

Traffic and Operating Statistics

COMPARATIVE STATEMENT FOR YEARS ENDED DECEMBER 31

ITEM	1932	1933	1934	1935	1936
Cars Owned	9,279	8,478	8,473	8,027	8,004
Cars Operated	5,693	4,944	5,029	5,057	5,355
Car Miles	799,484,608	710,747,267	737,167,857	758,554,032	825,945,721
Revenue Passengers:					
Berth	10,185,444	9,248,461	10,258,642	10,624,818	12,049,359
Seat	5,564,063	4,468,077	4,846,707	4,853,890	5,148,377
TOTAL	15,749,507	13,716,538	15,105,349	15,478,708	17,197,736
Revenue Passenger Miles	6,757,760,858	6,141,986,577	6,891,002,293	7,146,269,648	8,354,840,293
Revenue From Cars	$ 44,196,043	$ 39,316,239	$44,523,817	$46,758,260	$52,645,993
Average per Car	$ 7,763.50	$ 7,952.31	$8,853.77	$9,246.43	$9,830.82
Expenses	$ 45,416,077	$ 39,880,665	$44,124,174	$48,405,241	$49,191,772
Average per Car	$ 7,977.53	$ 8,066.48	$8,774.29†	$9,572.12†	$9,185.80†
Net Earning From Cars	$ *1,220,034**	$ *564,426**	$399,643‡	*$1,646,981**	$3,454,221‡
Traffic Averages:					
Average Revenue per Passenger	$ 2.81	$ $2.87	$2.95	$3.02	$3.06
Average Net Earning per Passenger	$ *0.08**	$ *$0.04**	$0.03	*$0.11**	$0.20
Average Net Earning per Car per Day	$ *0.59**	$ *$0.31**	$0.22	*$0.89**	$1.76
Average Mileage per Car Operated	140,438	143,760	146,589	150,004	154,232
Average Journey per Passenger (Miles)	429	448	456	462	486
Average Miles per Car Per Day	384	394	402	411	421
Average Loading per Car (Passengers)	8.45	8.64	9.35	9.42	10.12

* Figures in italics denote loss.
† Includes Pullman proportion of expense of operation of air conditioning equipment.
‡ After provision for Federal Taxes.

current liabilities totaled $15,303,259, as compared with $11,196,798 in 1935.

Operation of the sleeping car business resulted in earnings of $4,193,324 in 1936, contrasted with a loss of $1,646,980 in 1935. This is the best earning record in this division since 1930.

The manufacturing business earned $2,744,775, compared with $228,717 in 1935. This also reflects the highest level of earnings in this division since 1930.

Earnings of $892,597 from security investments, after provision for administrative expenses of the parent company, reflect a contraction of $455,504 from 1935, principally on account of lessened interest from securities that were sold or converted during the year and the cash proceeds absorbed in working capital accounts.

Gross revenue from sleeping car operations during 1936 showed a steady improvement. Marking the heaviest travel year since 1931, this improvement proceeded at an accelerating pace during 1936 as a result of the expanding industrial recovery and the special stimulus afforded by the sharply reduced travel costs now in effect throughout the country, following the reduction in rail rates and the elimination of the Pullman surcharge on June 1 in eastern territory. The index of gross revenue progressed from 62 per cent of the quarterly average for 1923 to 1925 in the second quarter, to 67 per cent in the third and 72 per cent in the fourth.

Additions to property and equipment account during 1936 were as follows:

Air-conditioning apparatus in cars	$6,578,944
Routine additions and betterments to cars	156,888
New and rebuilt cars	2,557,500
Improvements at laundries, shops, district offices, etc.	101,359
Improvements at manufacturing plants	333,142
	$9,727,833
Less: Retirements of cars and other property	3,526,377
Net addition	$6,201,456

During the year there were installed 57 general service cars, new and rebuilt, including 19 light-weight cars and 80 cars of obsolete types were retired, leaving a total of 8,004 cars of all classes on the equipment list at the close of 1936. The $3,526,377 of retirements during 1936 consisted mainly of obsolete types of general service cars—either rebuilt, revalued and reinstalled in the equipment list or scrapped.

At the close of 1936 there were available to the traveling public 4,152 air-conditioned Pullman cars, out of an estimated total of 8,078 air-conditioned passenger cars of all ownerships. Negotiations are under way with the using roads for the equipment of additional Pullman cars with air-conditioning apparatus for the 1937 summer travel period.

The consolidated income account as of December 31, 1936, as compared with 1935, follows:

	1936	1935
Earnings:		
From sleeping car business of The Pullman Company, after deducting all expenses incident to operations	$16,032,327†	$8,906,047
Less: Charges and allowances for depreciation	11,839,003	10,553,027
	$4,193,324	$1,646,980*
From all manufacturing business, Pullman railroad, and other miscellaneous properties, after deducting expenses incident to operations	$5,247,952	$2,866,583
Less: Charges and allowances for depreciation	2,503,177	2,637,866
	$2,744,775	$228,717
From security investments, etc., less administration expense of Pullman, Inc.	$892,598	$1,348,102
Total earnings from all sources	$7,830,697	$70,161*
Less: Provision for federal income tax	1,414,319	203,566
Provision for federal surtax on undistributed profits	69,272	.....
Balance carried to surplus	$6,347,106	$273,727*

* Deficit.

† NOTE: The Railroad Retirement Act of 1934 was declared unconstitutional in 1935. The charges therefor ($378.935.74) made in 1934 as part of the expense of operation were reversed and credit of that amount was taken as a reduction of expense of operation in 1935, in necessary conformity with Interstate Commerce Commission accounting rules.

CONSOLIDATED SURPLUS ACCOUNT

	1936	1935
Balance of surplus, as at December 31	$39,556,495	$50,893,430
Balance from income account for year ended December 31	6,347,106	273,727*
Adjustment arising from transactions in connection with acquisition of outstanding shares of The Pullman Company	.....	8,938
Adjustment on account of disposition of Lyndora Hotel property	29,207	.....
	$45,932,808	$50,628,641
Less: Adjustment on revalued property units retired	243,856	438,895
Adjustment on account of disposition of Saga-more plant	.....	605,233
Dividends declared and paid	5,730,596	10,028,018
Balance of surplus, as at December 31	$39,958,356	$39,556,495

* Deficit.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended March 13 totaled 748,993 cars, an increase of 14,866 cars or 2 per cent above the preceding week, an increase of 132,056 cars or 21.4 per cent above the corresponding week in 1936 and an increase of 151,562 cars or 25.4 per cent above the corresponding week in 1935. All commodity classifications except ore and coke showed increases over the preceding week, and all commodity classifications except grain and live stock showed increases over last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, March 13, 1937

Districts	1937	1936	1935
Eastern	169,211	135,857	135,340
Allegheny	157,488	117,862	120,349
Pocahontas	58,580	46,880	46,974
Southern	118,895	97,179	94,539
Northwestern	80,629	74,113	69,028
Central Western	106,566	92,653	85,070
Southwestern	57,624	52,393	46,131
Total Western Districts	244,819	219,159	200,229
Total All Roads	748,993	616,937	597,431
Commodities			
Grain and Grain Products	28,781	35,123	28,103
Live Stock	11,509	12,189	11,772
Coal	166,394	110,787	131,177
Coke	11,885	7,383	6,249
Forest Products	38,821	31,299	25,347
Ore	10,115	6,842	4,513
Merchandise L.C.L.	169,648	157,799	159,652
Miscellaneous	311,840	255,515	230,618
March 13	748,993	616,937	597,431
March 6	734,127	634,570	587,190
February 27	696,727	672,869	604,331
February 20	714,884	586,487	553,165
February 13	691,618	631,095	581,669
Cumulative Total, 11 Weeks	7,578,261	6,738,197	6,281,220

Car Loading in Canada

Car loadings in Canada for the week ended March 13 totaled 47,534, an increase of 2,124, or 4.7 per cent, over the corresponding week last year and an increase of 189 over the previous week, according to the summary of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
March 13, 1937	47,534	28,693
March 6, 1937	47,345	30,083
February 27, 1937	46,646	28,716
March 7, 1936	45,410	24,900
Cumulative Totals for Canada:		
March 13, 1937	466,098	276,628
March 7, 1936	412,327	224,498
March 9, 1935	424,974	224,594

Motor Transport Section

Canadian Pacific Express Trucks Aid in Railway's Merchandise Handling

Canadian Pacific Uses Trucks to Get Better Merchandise Loading

Use Montreal and Toronto streets for greater flexibility than could be provided by rail switching

THE Canadian Pacific has increased its average loading of merchandise cars between 4,000 and 5,000 lb. in the last five years. On the Canadian railways, with their many light traffic lines, a heavy average load can be secured only by loading very heavily between large centers, such as Montreal and Toronto, where the average varies from 15 to 17½ tons per car. In the month of October, 1936, the average was 31,558 lb. per car. This includes overflow cars, which in some cases are light, since no merchandise reaching the railway up to 6 p. m. is left behind.

The increased average loading of merchandise cars has been brought about in large measure by the use of motor trucks in consolidating freight at one central point in each terminal. Depending upon topographical conditions, the methods vary somewhat at various terminals. However, the principle is the same in each case, and the following description of the way in which operations are conducted in Montreal will serve to illustrate this principle.

The island on which the city of Montreal is located is extremely hilly, with a mountain in the center of the city. From the accompanying map it will be seen that the terminal tracks of the Canadian Pacific encircle this mountain. Because of the facilities available and for other operating reasons, it was decided to use Place Viger freight station facilities as the concentration point for merchandise traffic, even though there is no direct physical connection between St. Henry yard and Place Viger, or between the industrial tracks serving the busy manufacturing area south of the Lachine canal and St. Henry or Place Viger. This is caused by the widely varying levels on which these tracks are situated, Place Viger being in the lowlands adjacent to the river and the C. P. R. docks.

Under the collection and delivery plan, as much

freight as possible is brought by truck directly from the shippers' plants to Place Viger. A large quantity of freight, as for example transcontinental freight for points beyond the 375 mile C. & D. zone limit, is still brought to the outlying substations by shippers, although the regular cartage agents take all traffic direct to Place Viger and receive an allowance for the longer haul. Much freight is also brought to the Highlands station in the western end of the terminal. All such freight is consolidated and trucked directly across town to Place Viger, thus saving considerable distance and time. Freight brought in by the inter-station trucking line that serves stations as far north as Saint Jerome is also brought to Place Viger.

Loading at Place Viger takes place up to the last minute before the scheduled departure of the cars on the transfer run to Outremont yard, where the fast Toronto train is made up. Meanwhile, in accordance with the C. P. R. plan to leave no freight that can possibly be handled, last minute merchandise that has been brought into the St. Henry and Cote Saint Paul sub-stations, too late to make the Place Viger connection, is trucked across town to the Outremont yard. Meanwhile, the train has been made up there, with carload traffic, merchandise brought in by way freight trains from the northern line for western points, and last minute merchandise from the sub-stations. As soon as the transfer run with the solid merchandise cars from Place Viger arrives, these cars are consolidated with this train and it leaves within a few minutes. In this manner, by the consolidation by motor truck of all freight the train is to handle at Place Viger and to some extent at Outremont, the train makes no further stops in the Montreal terminal after leaving Outremont.

The eastbound train from Toronto receives similar speedy and simplified handling on its arrival in the morning. It proceeds through Ballantyne, where through traffic from the west for southern Quebec and New England points is set out. The train then proceeds via St. Luc Junction into Outremont, where a transfer engine is in readiness to take the Montreal merchandise down to Place Viger for distribution and early morning delivery by motor truck to the receivers. This train, too, is preclassified so that the set-outs are made with a minimum of time, effort and expense.

The overnight service between Montreal and Toronto has been instrumental not only in increasing the average loading—cars in these trains are frequently loaded with as much as 30 tons of merchandise—but has aided in bringing about the large increase in business indicated by the following table of merchandise loading at the 28 principal stations on the Eastern lines during October of each year:

	Cars Loaded	Total Weight of Lading Lb.	Average Per Car Lb.
1931	13,854	101,890,981	7,355
1932	11,121	83,490,600	7,508
1933	10,258	82,652,627	8,058
1934	11,345	92,932,172	8,191
1935	9,568	103,315,724	10,767
1936	9,689	116,644,487	12,039

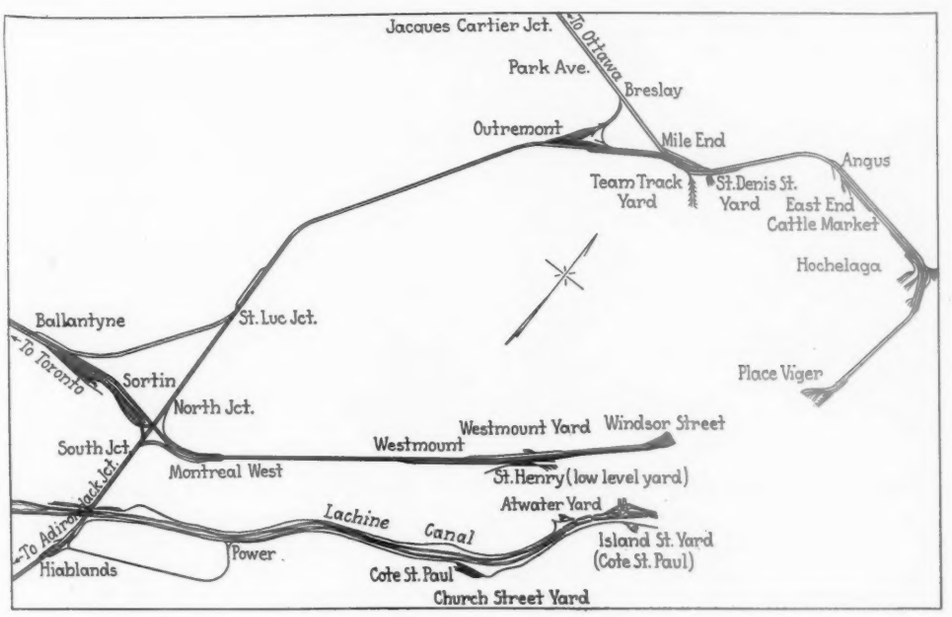
The speed at which these trains are operated is apparent when it is considered that all the merchandise loaded at Montreal and Toronto, where the cars are held for loading until 6:20 p.m., is available for unloading at 7 o'clock the following morning. The cities are 340 miles apart and the route mileage of the trains from shed to shed is approximately 360 miles. These trains handle carload freight in addition to merchandise. A large percentage of the merchandise is delivered to the consignees by 9 a.m., and, in addition, freight is transferred to the docks at Montreal to connect with transatlantic boats sailing at 10:30 on the same morning the goods arrive in that city. Motor trucks for points beyond Montreal leave that city about two hours after the arrival of the train.

Such prompt movement, of course, requires considerable pre-classification. However, the make-up of the train, and even the loading of merchandise in the cars in the most efficient manner, has been studied carefully to eliminate lost motion at both ends.

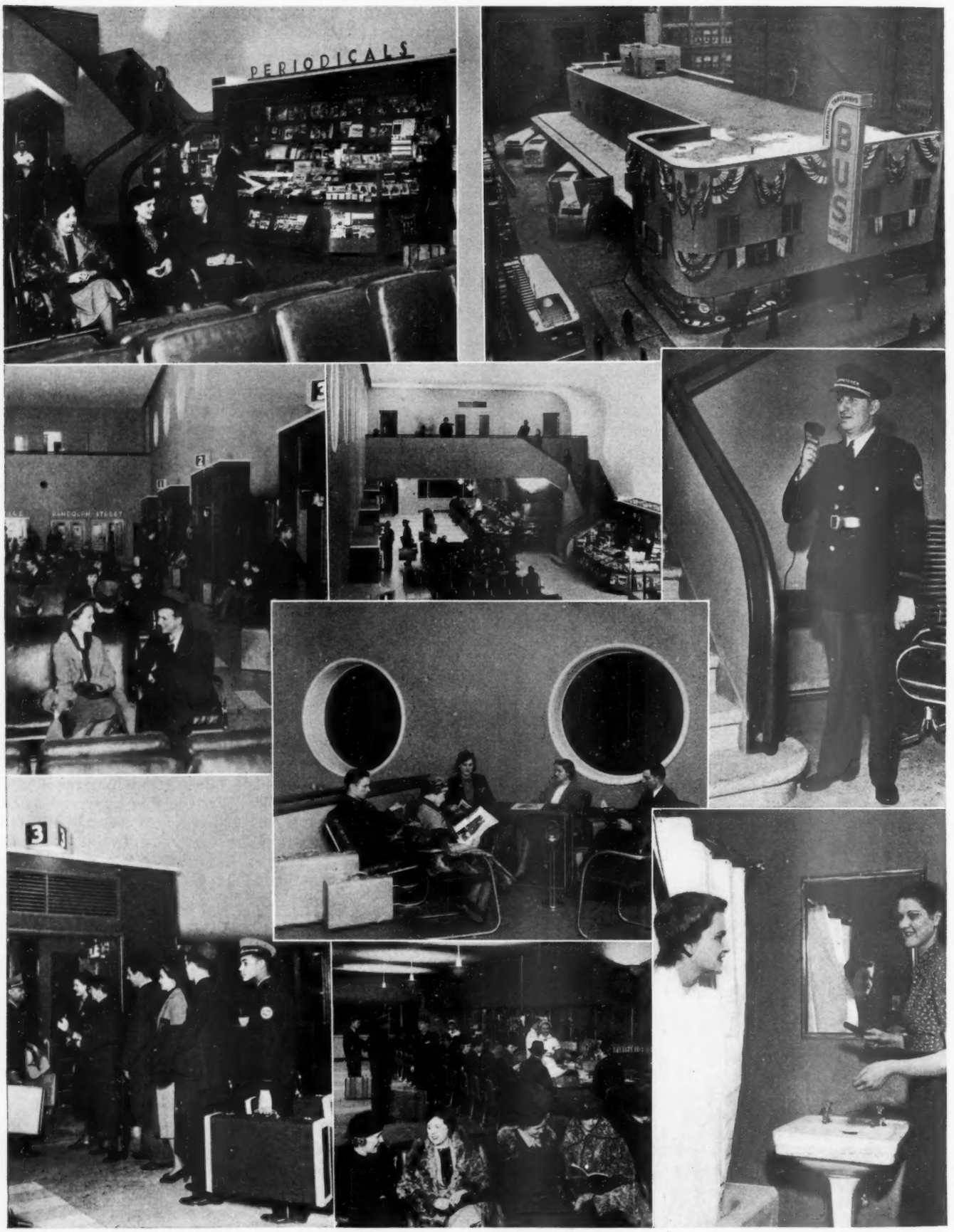
Other Factors

The Canadian Pacific has for years made an extensive study of the heavier loading of merchandise cars in eastern Canada where there is a fairly heavy movement, and as a result the average load per car was increased 4,684 lb., or 65 per cent. In the face of an increase of 14.6 per cent in the total tonnage of merchandise, it was handled in 4,165 cars fewer in 1936 than it was in 1931. If

(*Continued on page 564*)

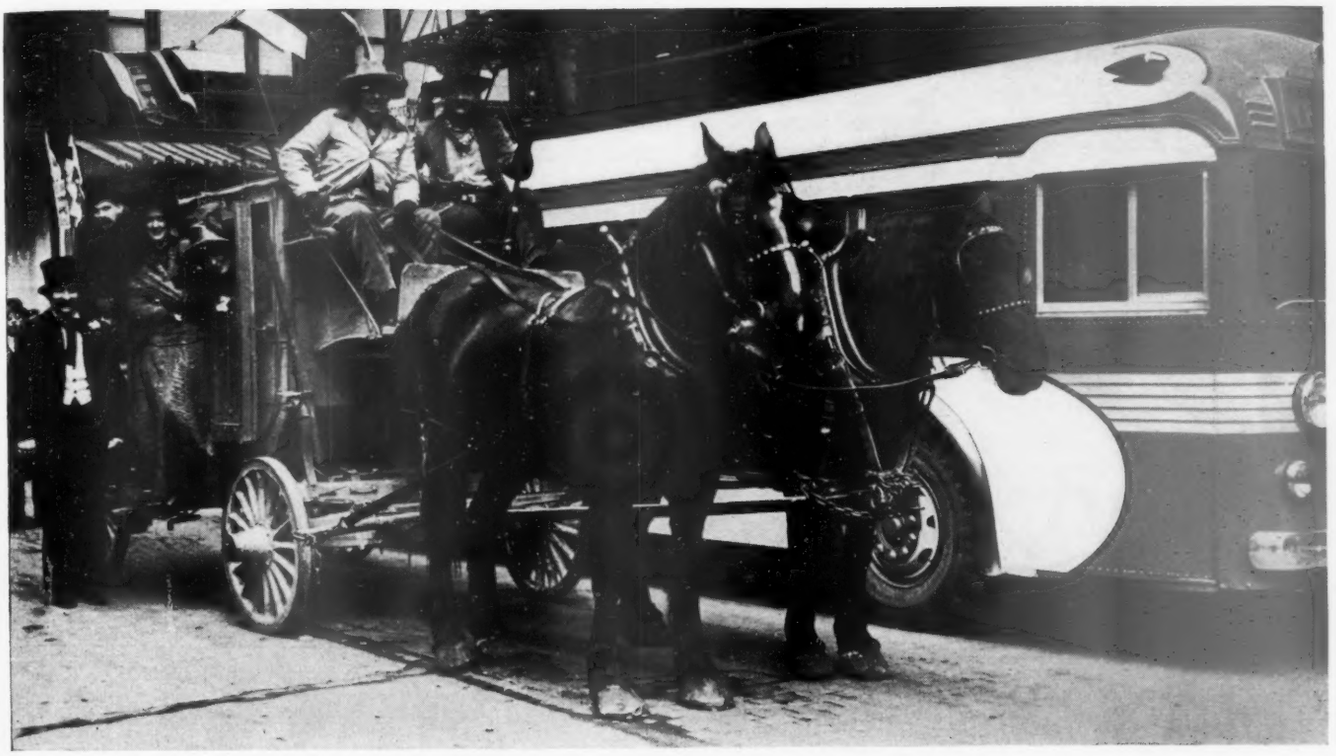


The Montreal Terminals of the Canadian Pacific



Views of the New Chicago Bus Station of the National Trailways System, Which Was Opened February 27

The project was engineered and developed jointly by the Santa Fe and Burlington Trailways. The new station is ultra-modern in both interior and exterior design, the waiting room being indirectly lighted, with inlaid, colored, marble chip flooring. A tour bureau, news stand, restaurant, lounge and rest rooms are provided. Approximately 200 buses will arrive and depart daily.



The Old and the New in Western Coach Transportation—A Burlington Trailways Streamlined Bus and an Overland Stage Coach of the 1860 Era

What Proposed Western Bus Consolidation Will Mean

Burlington-Union Pacific-Chicago & North Western merger will establish large coach-operating company

AS announced in the news columns recently, the Interstate Transit Lines has applied to the Interstate Commerce Commission for authority to acquire control of the Burlington Trailways. This would mean the consolidation of the four large bus companies, all wholly-owned railway subsidiaries, now operated as the Union Pacific Stages, the Chicago & North Western Stages, the Interstate Transit Lines and the Burlington Trailways. Inevitably, this brings into consideration the system that will be the outgrowth of the merger, if permission is granted for the consolidation. The accompanying map shows what an important factor the new system will represent in western bus transportation, with operations in 18 states.

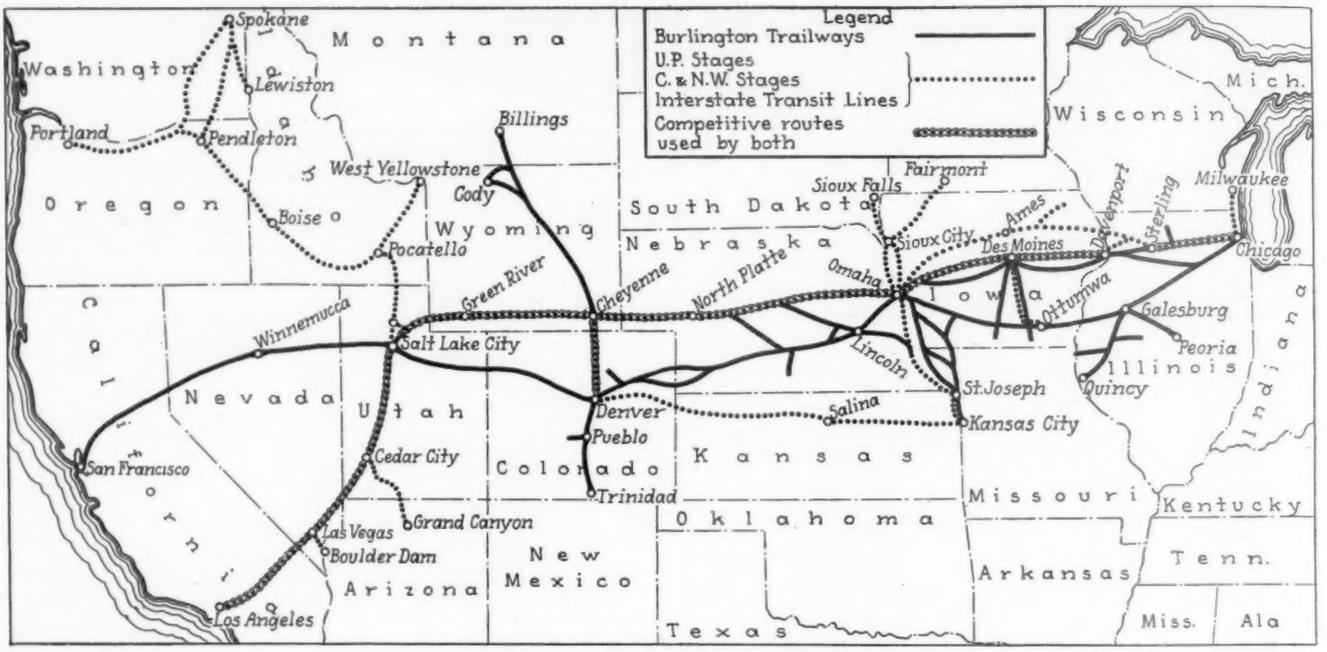
Purchase Agreement

The purchase agreement includes all Burlington motor vehicles and other rolling stock connected therewith; all shops and garages, furniture and other fixtures; certain franchises and certificates for operation; certain leasehold interests; the Burlington interest in the Chicago Bus Center; one-third of the common stock of the Denver-Salt Lake-Pacific Stages; one-half of the capital stock of the Denver-Colorado Springs-Pueblo Motorway, Inc.; and all the capital stock of the Denver & Interurban Motor Company.

The consideration for the sale is the issuance of 48,763 shares of common stock of the Interstate Transit Lines, Inc., at a par value of $10 per share, plus an additional 5,684 shares of common stock as consideration for the transfer of the common stock of the several motor carrier operations included in the purchase agreement. Additional shares of common stock at the value of $23.45 per share will be issued for physical improvements from September 30, 1936, until the day of transfer. Stock at that value or cash in lieu thereof can be issued.

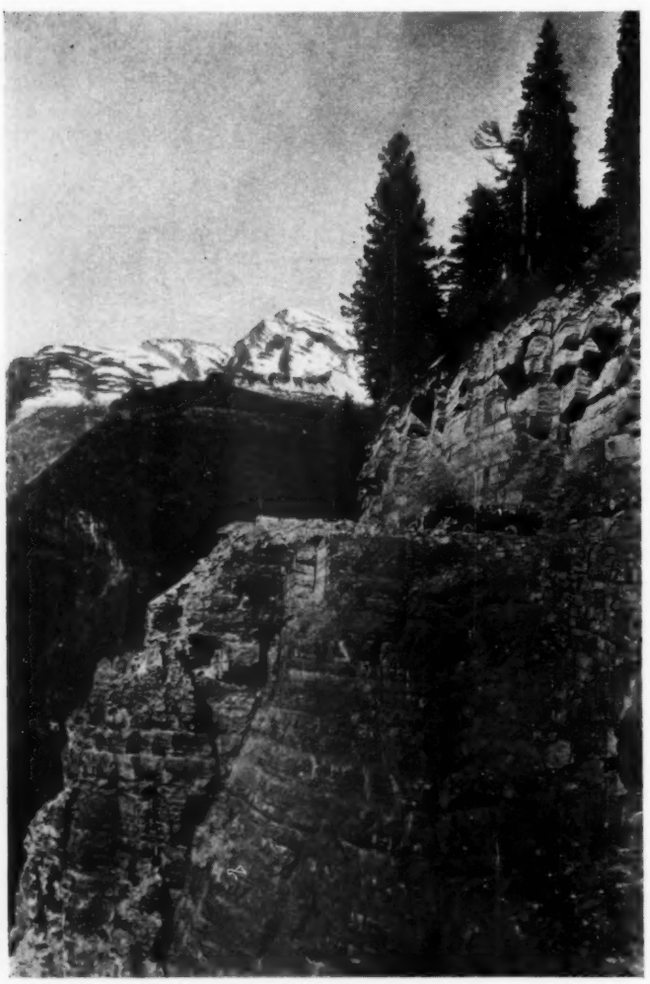
Chicago-Omaha Lines

Both of the existing systems have two important through routes between Chicago and Omaha; the Interstate system having a northern line through Sterling, Ill., Clinton, Iowa, Cedar Rapids, Marshalltown, Ames, Denison and Council Bluffs. The second line of the Interstate follows the northernmost route of the Burlington Trailways almost exactly between Chicago and Omaha, via Sterling, Ill., and Moline, and Davenport,



What the Combined Lines Will Look Like If Application Is Approved

Iowa, Iowa City, Des Moines and Atlantic. The second Chicago-Omaha route of the Burlington runs south of the other routes, through Aurora, Ill., and Galesburg, Burlington, Iowa, Ottumwa, Osceola and Red Oak. The Burlington has numerous branch routes in Illinois, to such points as Rockford, Galesburg and Quincy and both systems operate a network of branch routes in Iowa, largely centering about Des Moines. The Burlington does not operate north of its northernmost Chicago-Omaha main line, but the Interstate operates a joint route between Chicago and Milwaukee in connection with the Northland Greyhound Lines, and also an Omaha-Twin Cities route via Interstate between Omaha and Fairmont, Minn., and Northland Greyhound between Fairmont and Minneapolis-St. Paul.



Union Pacific Stages Have Opened Many Scenic Vistas in West

Prairie Routes

Both systems operate between Omaha and Kansas City, the Interstate on the west side of the Missouri river and the Burlington on the east side, while the Interstate also operates north out of Omaha to Sioux City, Iowa, and Sioux Falls, S. D.

Both lines have a number of branch routes in Nebraska, and their main Omaha-Cheyenne routes operate over the same highway for most of the way, as they do between Cheyenne and Denver. The Interstate operates a through service between Kansas City and Denver, practically paralleling the parent railway's line between those points, via Topeka, Kan., Manhattan, Salina and Ellsworth, and Cheyenne Wells, Colo., and Limon. In addition to its Omaha-Denver line via Cheyenne, the Burlington also has a bus line between these points paralleling its parent railway, via Lincoln, Neb., Hastings and McCook, and Akron, Colo., and Brush.

Mountain Operations

Both systems serve the Yellowstone Park district, the Interstate with its route between Salt Lake City and West Yellowstone, Mont., and the Burlington with a route between Cheyenne, Wyo., and Cody and Billings, Mont. The Cheyenne-Salt Lake City routes of the two systems are operated over almost exactly the same highways. Through its part ownership of the Denver-Salt Lake-Pacific Stages, the Burlington has an alternate Denver-Salt Lake City route through northern Colorado, and this system also has a considerable interest in

the Denver-Colorado Springs-Pueblo Motor Ways, operating between Denver and Trinidad.

Between Salt Lake City and Los Angeles, the two systems now operate competing services over the same highway. The Burlington has no branch routes in this territory, but the Union Pacific Stages have a considerable operation out of Cedar City, Utah, serving Zion, Bryce Canyon and Grand Canyon National Parks, as well as out of Las Vegas, Nev., serving Boulder Dam.

The Burlington does not operate northwest of Salt Lake City, but the Interstate system has a number of important routes in that territory, notably between Salt Lake City and Portland, Ore., and between Portland and Spokane, Wash.

It will be seen that, so far as transcontinental routes are concerned, the two systems have been competing for the Chicago-Los Angeles traffic with runs operating over practically the same highways. The same is true with regard to the Chicago-San Francisco business. The Burlington operates two round trips daily between Salt Lake City and San Francisco, whereas the Interstate does not operate over this highway. Through its close connections and through ticketing arrangements with the Pacific Greyhound Lines, however, which operate a service between Salt Lake City and San Francisco over the same highway as the Burlington, the Interstate is an important competitor of the Burlington Trailways for the Chicago-San Francisco business. The two lines do not compete, of course, for the transcontinental business to the Pacific Northwest, as the Burlington does not have through routes into that territory.

Manifestly, under a consolidation, a number of the present competing runs can be eliminated without detriment to the service now being rendered to the public, but, as yet, no future operating plans have been announced, nor has it been stated whether the combined systems will be a part of the National Trailways group, consisting of several other railway and independent lines, of which system the Burlington Trailways are an important unit and played a large part in organizing.

Cutting Corners by Truck Operation

Santa Fe finds highway vehicles flexible and convenient in solving problems in California

THE Atchison, Topeka & Santa Fe has been in the highway trucking business in California only a short time, having started in the fall of 1934, but it has found the use of trucks in rail-highway co-ordination valuable in solving many operating problems in connection with the transportation of merchandise. The truck operations were handled, for some time, by operating officers having other duties, but, a few months ago, a separate organization was formed to direct the operations of the Santa Fe Transportation Company, and also to study means whereby the use of rail-highway co-ordination might be increased in the interests of efficient service.

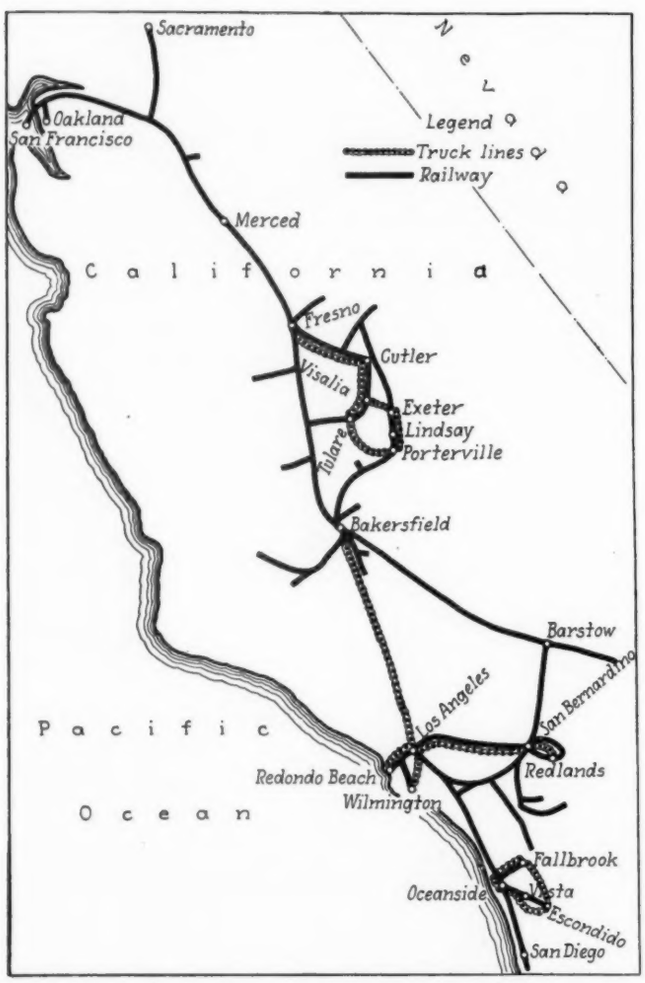
The accompanying map shows the operations now conducted by the Santa Fe Transportation Company, which is a wholly-owned subsidiary of the Atchison, Topeka & Santa Fe, and an idea of the broad usefulness of trucking service may be gained from the fact that each of these rail-highway co-ordinations represents the solution of a quite different problem in operations. Included among the operations is that between Bakersfield, Calif., and Los Angeles, described in detail later, which is unique

Tractor and Trailers Used in the San Joaquin Valley

The Santa Fe Serves Los Angeles and Its Seaport by Truck

in that is is one of the few, if not the only, rail-highway-rail co-ordinations in the country.

As may be seen on the map, the Santa Fe has a network of branch lines in the San Joaquin valley between Fresno and Bakersfield. This trackage was built largely to serve the fruit-raising territory in this vicinity, and so far as carload traffic was concerned, satisfactory service is afforded. Competing truck lines, however, could offer so much more prompt service on l.c.l. freight that the Santa Fe was losing a large percentage of its merchandise traffic to other agencies of transportation.



Map Showing the Location of the Santa Fe's Rail-Highway Co-ordination Truck Lines in California

Accordingly, a trucking service was installed by the Santa Fe on October 25, 1934, to connect with the main line trains at Fresno, and to serve such important centers as Cutler, Visalia, Tulare, Exeter, Lindsay and Porterville. This service was described in detail in the *Railway Age* of August 24, 1935, and its principal features remain the same as indicated in that article, with the exception that the merchandise train from the north has been speeded up so that it now arrives at Fresno at 4 a.m., providing earlier delivery at all points served by the trucks and the further exception that the actual merchandise handled has far exceeded the expectations for future business made at that time. The two runs involved are handled by a 12-ton International and a 6-ton General Motors tractor, hauling semi-trailer bodies, both trucks being powered to handle extra trailers when the business is running heavy.

The rail line of the Santa Fe between Bakersfield and Los Angeles is in the form of a two-sided triangle open at the base, since the line turns eastward at Bakersfield and continues in that direction as far as Barstow, when it turns westward again into Los Angeles. The Santa Fe has the only rail line into San Diego from the north, and its line between San Diego and Los Angeles is direct, running at or very near the coast all the way. However, because of the long mileage between Bakersfield and Los Angeles, merchandise between San Diego and northern points such as San Francisco, Oakland and Sacramento, could not be handled faster than to provide for from third to fourth morning delivery in each direction.

The so-called "Ridge Route" between Bakersfield and Los Angeles, a broad, high-speed highway, offered a solution to the problem of providing better service. This road, across the open base of the triangle formed by the Santa Fe rails, is approximately 150 miles shorter than the rail line between the two points mentioned above, and the establishment of a truck line over this highway by the Santa Fe Transportation Company has resulted in attracting back to the Santa Fe much of the merchan-

dise traffic moving to San Diego from northern points.

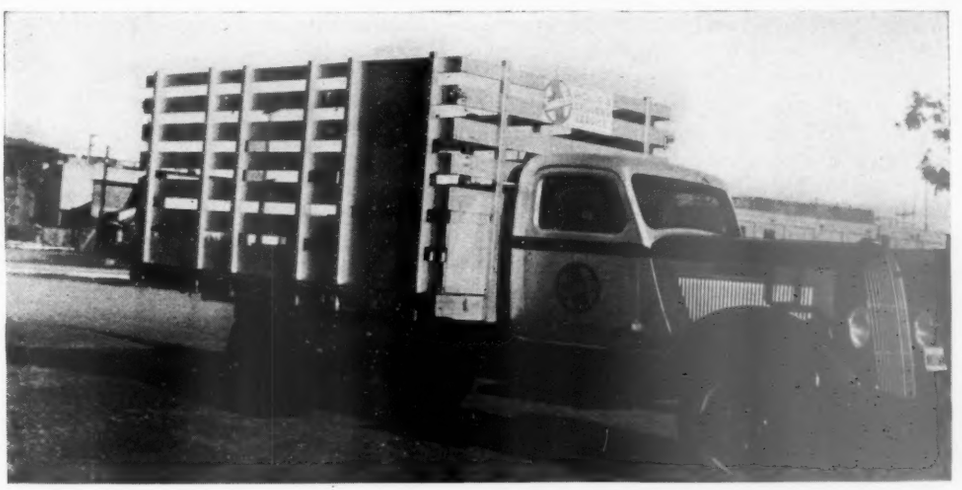
This merchandise is handled on fast trains from the northern points, arriving in Bakersfield in the early morning. It is transferred there from the freight cars to the Santa Fe trucks, which handle it into Los Angeles, where it is transferred from the trucks back to freight cars, which move out on the night trains to San Diego and intermediate points, arriving in the early morning, in plenty of time for second morning delivery—instead of the previous third or fourth morning delivery. Pick-up and delivery service is provided at San Diego by the Railway Express Agency under contract with the Santa Fe, and the merchandise is delivered to the consignee before nine o'clock in the morning. The northbound service is handled in the same manner—that is to say, by rail-highway-rail co-ordination.

As will be seen from the map, the Santa Fe has a branch line from Los Angeles to Redondo Beach, with a branch of this branch into Wilmington, the port of Los Angeles. To accelerate the movement of merchandise between the ships and the main line trains operating to and from Los Angeles, a contract has been entered into with a local trucking company under which all l.c.l. freight is trucked between the docks and the Los Angeles freight houses of the Santa Fe, or to consignees if destined locally. This trucking service has resulted in a saving of 24-hr. on l.c.l. traffic interchanged between rail and steamship at Los Angeles Harbor. The Santa Fe now has an application filed with the Interstate Commerce Commission for permission to purchase a truck line's operating rights, and if the application is approved, the Santa Fe Transportation Company will perform this service with its own equipment. A similar contract trucking arrangement is in effect between Los Angeles and Redondo Beach, thus materially alleviating the difficulties formerly experienced in handling merchandise on these branches out of Los Angeles.

The Santa Fe has two branch lines serving fertile agricultural territory out of Oceanside, Calif., a point about half-way between Los Angeles and San Diego. The town of Vista, on one of these branches, is the center of a large avocado producing territory. Avocados move in relatively small lots, and the problem here was to get them from the branch line to the main line at Oceanside, so that those moving via express could be placed on the main-line passenger trains, and those moving via l.c.l. freight could make prompt connection with the main-line freight trains for prompt movement. Branch line train service to provide for such connections at the times when the shippers desired to load the avocados and have them move was cumbersome and expensive and much of the avocado business was being lost to highway truckers. However, on November 1, 1936, a trucking service was established by the Santa Fe between Vista and Oceanside, providing a flexible service that has brought much of this traffic back to the rails. This trucking service provides for pick-up of the produce in the fields, a service which has proved most popular.

A triangular trucking service between Oceanside, Escondido and Fallbrook (the latter towns being at the ends of separate branch lines) was established in January, 1935, so as to simplify the problems of merchandise handling on these branches and to speed up the service, in some cases, by as much as 24 hr. This operation has been entirely successful and has brought much traffic back to the rails.

As a result of the success of these varied operations in California, the Santa Fe Transportation Company management is studying still further opportunities for securing economy and better service through rail-highway co-ordination, and plans to expand the service materially. Effective March 1, 1937, the Santa Fe Transportation Company, under authority granted by the Interstate Commerce Commission, took over a truck line operating between Los Angeles and San Bernardino, Redlands and other points in the same district. This truck service is being co-ordinated with the rail service, and details of operation are now being worked out with a view to improving the service materially between the points involved.



Avocado Trucks Pick Up Produce in the Fields

Greyhound Buys Buckeye Stages

THE Pennsylvania Greyhound Lines and the Central Greyhound Lines, both railroad affiliates, have each purchased a 20 per cent interest in the Buckeye Stages and the presidents of both Greyhound companies have been elected to the Buckeye board of directors. The Buckeye Stages have widespread operations in Ohio, and also have a line across the state between Pittsburgh and Detroit. The schedules of the three companies will now be more closely co-ordinated in the interests of improved service, and, wherever possible, the Buckeye Stages will use Greyhound terminals.

The Grade Crossing Problem

(*Continued from page 547*)

same policy were continued, the number of important crossings which could not be reached would be increased. For these reasons, while continuing in the main the division between the railroads upon the same mileage ratio, exceptions have been provided to make possible the use of funds for improvements having a high priority, even though the allotment of funds to a particular railroad would be increased. In a few cases previously there was vigorous insistence upon adhering to an exact division of the funds between the railroads. On the other hand, there were numerous instances of a most generous attitude on the part of the railroads, when it became evident that improvements in which they were particularly interested could not be undertaken immediately, in agreeing to important work elsewhere.

The remarkable results which already have been secured have been through the combined efforts of the railroads, the states and the federal government. We can confidently expect equally desirable results to come in other fields such as flood control where necessary to protect against losses and provide for continuity of operation of transportation lines. The field is open through co-operative effort to secure at minimum cost the elimination of a tremendous number of unimportant grade crossings by careful planning.

It would not be proper to close this paper without giving credit to the committee established by the railroads to co-operate with the states and the Bureau of Public Roads in the development of the grade crossing program. This committee, composed of R. E. Dougherty, vice-president of the New York Central Lines; W. D. Faucette, chief engineer of the Seaboard Air Lines; R. H. Ford, assistant chief engineer of the Rock Island Lines; G. W. Harris, chief engineer of the Santa Fe System; R. J. Middleton, assistant chief engineer of the Milwaukee System; W. D. Wiggins, chief engineer of the Pennsylvania System; and J. G. Brennan, contact engineer; have devoted generous time and intelligent application to every detail of the work, and are to be given full credit for suggestions based on their wide experience in meeting the problems of administration which have been handled with the minimum of friction and disagreement. The engineering departments of the railroads and the state highway departments have worked almost as one organization to produce results which are now becoming widely apparent as tangible assets contributing to the public's convenience and safety. I regard co-ordination of this character definite, large scale and accomplished with economy, as genuine co-ordination which we hope has only just begun.

Canadian Pacific Uses Trucks to Get Better Loading

(*Continued from page 557*)

the load per car had remained stationary, 6,442 more cars would have been loaded per month in 1936.

These results have been accomplished by the use of motor trucks for consolidating merchandise at the larger terminals and for distributing it at local points as previously explained, by the more efficient stowing of freight in cars and, in some instances, by consolidating the freight from several cars into one car, which, while it involves an additional trans-shipment enroute, has in many cases permitted much better despatch to freight and reduction in train costs. Frequently branch lines received cars from each of two or more large distributing centers and in some instances way freight trains on these branch lines would handle four or five way cars. This freight is now transferred at the junction point and cars loaded direct to each of the principal towns on the branch line. This trans-shipment usually takes place during the night so that the freight will reach destination in the morning. This again reduces the work to be done by the train crews and permits the operation of the train from the branch line junction at an earlier hour, which improves the despatch for both carload and l.c.l. freight.

As an example, several large manufacturing towns are located on the division between Smiths Falls and Chalk river. The way freight serving this sub-division formerly handled merchandise cars from Montreal, Ottawa, Toronto, Smiths Falls, Brockville and St. Henry. With the "working" of this number of cars at each station, it was late in the day before the towns at the end of the run received their freight. Under the new arrangement, the merchandise cars leave each of the originating points mentioned above in the early evening and reach the transshipping point at Smiths Falls between 10:40 p.m. and 1:15 a.m. The freight is transferred and re-assembled to leave Smiths Falls not later than 3 a.m. and is available for delivery to the consignees at the various towns by 7 a.m.

This procedure has effected a reduction in the number of cars loaded, has reduced train costs and has greatly improved despatch, as there is now overnight service from all points. This overnight service includes freight moving from any one town to another in the general area between Montreal, Toronto, Hamilton, Brantford, Kitchener, North Bay and Ottawa.

New Book . . .

Kent's Mechanical Engineers' Handbook—Power. Published by John Wiley & Sons, Inc., New York. 1,254 pages, illustrated; 5-5/8 in. by 8-5/8 in. Price, $5.

Kent's Handbook in two volumes of which "Power" is the first, is the second of the revised Wiley Engineering Handbook Series. The second volume, "Design and Shop Practice," will not appear until spring. "Power" deals with the entire field of power and its application. It is divided into 17 sections. Section I, Air, includes not only a description of the properties of air, but also a discussion of the flow of air and a full treatment of air-compression, including fans and blowers. Section II, Water, covers the fundamentals of hydraulics. Section III, Heat, treats of the measurement of heat, heat transmission, evaporators and evaporation, dryers and drying, heat insulation and thermodynamics. A section on Combustion and Fuels follows. Section V gives information concerning steam, with extensive data as to its properties, steam piping and steam valves. Section VI applies these principles of the action of steam to the steam boiler, describing the various types of steam boilers, their performance, construction, etc., as well as superheaters, economizers and air heaters, moisture in steam, feedwater for steam boilers, boiler furnaces, and chimneys and draft. Section VII discusses the Steam Engine, while Section VIII covers the types, performance, etc., of the steam turbine. Section IX deals with Condensing and Cooling Equipment, and Section X with Refrigeration and Ice Making. Section XI presents a summary of the essential information in the field of Heating, Ventilating and Air-Conditioning. Internal-Combustion Engines, including Diesel, gas and gasoline engines, are given much space in Section XII and Gas Producers in Section XIII. The needs of the mechanical engineer in railroad engineering, automotive vehicles and aeronautics are covered in Section XIV. Section XV summarizes the fundamentals of Electric Power. Power Test Codes are discussed in Section XVI and Section XVII contains mathematical tables of importance to the mechanical engineer.

NEWS

Regulatory Bill Killed in Canada

Senate there rejects Minister Howe's all-inclusive transport proposal

Canada's Senate—which is usually a "lame duck" body, of the political complexion of the preceding, rather than the current, administration—has killed Transport Minister Howe's bill to regulate all forms of transport and to allow the railways to offer contract freight rates. With half the members absent, the vote on the third reading of the bill was 30 against and 18 for.

This is the first important Senate execution of a Government measure since the time in Premier King's previous administration when the famous Canadian National Branch Line Bill was thrown out. That measure was rejected because it was an omnibus bill, obliging the Senators to vote for all or none of the proposed branch lines. Later these lines were provided for in separate bills.

During his speech on the motion for third reading Senator Meighen, the Conservative Leader, declared there was need for some measure to restore order out of the chaos that now existed in the transportation situation both on land and on the Great Lakes. The railways were, he said, being subjected to unfair competition on the Great Lakes. There was not a steamship company that was not bankrupt, but he was convinced the government was not adopting the proper means to bring about a remedy.

Senator Raoul Dandurand, Government Leader, closing the debate, combatted the Conservative contention, pressed by Western members, that the proposed regulation of Great Lakes rates would tend to increase the charges for the carriage of grain. He declared that the growers would not be hurt by this, but rather the traders, as the farmer in most cases had sold his wheat long before it was put on the boats at the head of the lakes.

In its final form the bill, which had been subjected to many changes both in the Senate committee on railways, telegraphs and harbors, and in the Senate itself, provided for regulation by the Transportation Commission of water carriage on the Great Lakes, and on water carriage between the Atlantic and Pacific coasts through the Panama Canal. It also gave the railways the right to do business under "agreed rates" as in Britain, and it provided control of interprovincial highway traffic and airways business.

Most of the provincial governments opposed the provision for even limited highway regulation on the ground that serious confusion would arise from federal attempts to regulate interprovincial and international truck movements, and it was on this point that Senator Meighen laid considerable emphasis. He contended that this provision would provoke constitutional conflicts with the provinces, that the small amount of truck traffic that was interprovincial was not worth the trouble that would attend attempts at its control.

Touching on the clause to permit contracts for "agreed charges," Senator Meighen said he was very doubtful if enough evidence had been produced to show whether or not this provision was a success in England. Further, he contended, even if the provision had been a success in England, there was no evidence submitted if it would be adaptable to Canada.

He said he had received many complaints against the "agreed charges" provision, principally on the ground it would operate in favor of the "big fellow and against the little fellow."

No minimum rates would be fixed by the proposed board, Senator Dandurand emphasized in his defense of the measure. There was nothing in the bill to increase the cost of moving grain from the head of the lakes to Montreal, he added.

"It was a blessing for everyone in Canada when the Board of Railway Commissioners was set up, a blessing to the west," Senator Dandurand said. "The new board would function similarly. Regulation of rates by the Railway Board had always been fair to the railways, to the shippers and to the public to the same extent."

Barge Lines Resume Service

The Federal Barge Line has resumed service between St. Louis, Mo., and Peoria, Ill., and Chicago, and between St. Louis and Kansas City, following the discontinuance of schedules for the winter. Service between St. Louis and the Twin Cities will be opened about April 1.

Cent-a-Mile Rate on the Mississippi Central

The Mississippi Central claims to be the "first and only railroad in the United States to inaugurate a basic passenger fare of one cent per mile." It has established that rate between Hattiesburg, Miss., and Natchez, where, a statement points out, it operates "first class trains, not mixed trains."

Resume Hearings on Freight Rates

Witnesses opposing increases present testimony in Ex Parte 115

Hearings on the general rate increase application of the railroads in Ex Parte 115 were resumed before the Interstate Commerce Commission on March 23 with Charles E. Bell, tariff and commerce analyst, who was connected with the former office of Federal Co-ordinator of Transportation, as the principal witness. Mr. Bell introduced charts which purported to show that the total operating income of the railroads during the past year had increased faster than had the total operating expenses. He went on to say that he felt that if the present trend in increased car loadings continued, the railroads would not need the income which would accrue from the increased rates which they are asking the commission to approve. He told the commission that carloadings for the first eleven weeks of 1937 totaled 7,578,261 cars as compared with 6,737,997 cars for 1936 and 6,281,225 cars for 1935. These figures, he said, showed that the increase in car loadings for the first 11 weeks of 1937 over the same period for 1936 was 840,264 cars or 12.37 per cent; and that the increase of 1937 over 1935 was 1,297,040 cars or 20.65 per cent. Mr. Bell added that he felt that the trend in increased car loadings and net operating income would continue during the present year.

The first witness for the shippers who are opposing the general rate increase, Mr. Bell also told the commission that the railroads now are saving about $175,000,000 a year on locomotive fuel as compared with 1922. He added that he felt that the emergency no longer existed and contended that the petition for increased rates was nothing more than an attempt to have the emergency surcharge translated into the permanent rate structure. The witness asserted that "although it must be conceded that the net revenue of the railroads is less than it should be, the upswing in traffic and revenues, particularly in net revenues, has been and still is so rapid that it is impossible at this time to determine what, if any, changes in freight rates should be made until the effect of the improvement in traffic is known over a reasonable length of time. It is possible that reductions instead of increases may be justified.

Henry J. Saunders, in behalf of the National Coal Association, presented exhibits

and testimony purporting to show that the roads in receivership received but a small proportion of the emergency freight rate surcharges when they were in effect. He also put in an exhibit of index numbers which, he said, showed that freight operating expenses since 1920 have shown a greater decline than either ton-miles or revenue.

Robert E. Webb, chairman of the Kentucky Railroad Commission, gave the rough outlines of an entertaining fantasy in which he portrayed the railroads as a fairy godmother extricating the coal industry from all its difficulties. The sorry plight of the trade was first limned in tear-jerking horror—the competition of other fuels and the bad living conditions in the coal fields. The railroads, he showed, do not desire the fairy godmother role; rather they want to "place the burden on those least able to bear it." But Mr. Webb proposes to change all that, by calling on the roads to wipe out all interest payments above 4 per cent and by eliminating all dividends over 6 per cent. By scaling down their interest, he estimated, $57,000,000 would be saved and, by reducing dividends, $93,000,000. A further saving of $5,000,000, he believed, could be saved by reducing official salaries to the equivalent of those paid to other "public officials."

Commissioner Aitchison asked the witness whether he considered that railroad officers were public officials, and he explained that their positions were "quasi-public." As for scaling down interest and dividends, the witness suggested that the security holders could voluntarily "take this loss," although he admitted, under questioning, that scaling down interest would amount "in substance" to repudiation. These changes, he asserted, would make rate readjustments unnecessary.

T. D. Geoghegan testified in behalf of the Virginia Corporation Commission, his evidence being largely an examination of the financial strength of the Pocohontas coal roads, the implication being that higher rates were not needed by these carriers. Asked whether reductions in maintenance of way expenses which he cited might not represent retrenchment, he said that the annual reports of the roads stated that their properties were well maintained, but the only citations he made from such reports were from those of the Norfolk & Western and the Chesapeake & Ohio.

A.R.E.A. Selects Date for 1938 Convention

At a meeting held immediately after the conclusion of the convention on March 18, the board of direction of the American Railway Engineering Association fixed the date for the next annual convention as March 15-17, 1938.

Wallace to Address Atlantic Shippers Board

The Atlantic States Shippers Advisory Board will meet at Elmira (N. Y.) on April 7 and 8. Among the features of this meeting will be an address by L. W. Wallace, director of equipment research, Association of American Railroads, and a freight container exhibit prepared by the Freight Container Bureau of Association to promote April as the "Perfect Shipping Month." The Board's legislative committee will present its recommendations on the proposal to place the Interstate Commerce Commission under the Department of Commerce.

Southern Bids for Travel of Baseball "Fans"

The latest timetable of the Southern features a full-page advertisement of that road's services to towns where the spring training quarters of major league baseball teams are located. The spring training schedules of the National and American league teams are given, while baseball "fans" are urged to take advantage of the Southern's low fares to points where these games are to be played.

Hearings on Train Dispatchers Bill

The House committee on interstate and foreign commerce held a hearing on March 18 on H.R. 208, which is a bill which would give the Interstate Commerce Commission power to investigate conditions in train dispatching offices and train dispatching service, and to promulgate rules and regulations governing working conditions of train dispatchers. This is a similar bill to Senate bill 532 which has been reported out of committee in the Senate. It is sponsored by the American Train Dispatchers' Association and the Railway Labor Executives' Association.

Saturday Fares for Children on Jersey Central

In an effort to encourage five-day-a-week workers among its commuters to take their children into New York City on Saturdays, the Central of New Jersey will try out during April special low round trip Saturday fares for children. It is suggested that, while he takes advantage of the low rates for the youngsters, "Dad, of course. can use his commutation ticket or the low coach fares." The children's ticket, for those between the ages of 5 and 16 years, will be valid for the journey into New York on specified trains but unrestricted as to the return trip.

New Equipment on Order

Class I railroads on March 1 had 42,212 new freight cars on order, the Association of American Railroads has announced. This was the greatest number on order on any corresponding date since 1926, when there were 50,947. On March 1, last year, the railroads had 12,679 cars on order, and on the same day two years ago, there were 514. Of the new freight cars on order on March 1, this year, coal cars totaled 22,-240; box cars (including both plain and automobile), 15,160; refrigerator cars, 3,183; flat cars, 929; and stock cars, 700. Class I railroads had 375 new steam locomotives on order on March 1, this year, a larger number than on any corresponding date since 1930, when there were 450. New electric and Diesel locomotives on order on March 1 totaled ten.

New freight cars placed in service in the first two months this year numbered 6,135, the greatest number installed in any corresponding period since 1930. In the first two months last year, 1,925 were put in service, while two years ago there were only 428. New steam locomotives installed in the first two months this year totaled 22 compared with one in the corresponding period last year and seven in the period two years ago. New electric and Diesel locomotives put in service in January and February, this year, numbered seven compared with one in the same period last year and 20 in the same period in 1935. New freight cars and locomotives leased or otherwise acquired are not included in the above figures.

Club Meetings

The Car Foremen's Association of Omaha will hold its next meeting on April 14 in the office of the general foreman of the Union Pacific at Council Bluffs, Iowa. T. P. Schmidt will speak on "Delays to Loaded Cars on Account of Bad Order."

G. E. Gaylord, superintendent of the Southern Pacific, will speak on "What's on Your Mind" at the next meeting of the Pacific Railway Club to be held on April 8 in the Key System Auditorium, Oakland, Cal.

The annual dinner of the Metropolitan Traffic Association of New York will be held on Thursday evening, April 15, at the Hotel Pennsylvania in that city.

Toward Accounting Uniformity on Canada's Railways

Agreement is being sought among all Canadian railways for a uniform accounting system, Transport Minister Howe told the Railways and Shipping Committee of the House of Commons at Ottawa last week.

Mr. Howe said a committee had been established which he hoped would soon arrive at a common accounting method for all railways. The committee is composed of representatives of the Canadian Pacific and Canadian National, the Transport Department, the Bureau of Statistics and the Canadian Railway Association. Announcement by the Minister was precipitated by questions from R. J. Deachman (Lib., Huron North) as to comparative maintenance and operating ratios of the Canadian Pacific and the Canadian National, and discussion developed that strict comparability between them does not exist.

New England Shippers Board

Carloadings during 1937's second quarter will be 4.87 per cent higher than during the comparable 1936 period in the territory of the New England Shippers Advisory Board, according to the forecast made following that organization's March 17 meeting at Boston, Mass. The forecast announcement points out that the New England Board's 1936 forecast varied only 147 cars from that year's actual loadings.

The proposed "make-work" bills now before Congress and the proposed changes in the Interstate Commerce Commission, as outlined in President Roosevelt's message of January 12, were discussed by W. H. Day, manager of transportation, Boston Chamber of Commerce. It was resolved that the Board is definitely not in favor of any of this legislation and Mr.

Day as chairman of the legislative committee was instructed to oppose these bills if and when they come out of committees for consideration by Congress. The proposed St. Lawrence-Hudson cut-off canal was the subject of remarks by Frederick L. Wheeler, principal assistant general attorney of the New York Central. Holcombe Parkes, assistant director of public relations of the Association of American Railroads, outlined some of the improvements made since the inception of railroading and continuing to the present time. In this connection he presented the Association's "voca-film."

L. M. Betts of the Closed Car section of the Car Service division told of the plans for increasing the car supply to the point where it would be ample to take care of anticipated business which he estimated will be 15 per cent over 1936. William F. Garcelon was re-elected general chairman for the thirteenth successive term.

Brotherhoods Make Formal Demand for Pay Increase

Formal demand for a 20 per cent raise in basic pay was made upon the railroads by the Big Five Brotherhoods on March 22, the action following that of 16 non-operating brotherhoods which made formal demand for a 20 cents an hour increase on March 4. Representatives of the Big Five Brotherhoods decided upon a 20 per cent increase at a meeting at Chicago on January 20, while the 16 non-operating brotherhoods decided upon a demand for a general increase of 20 cents in the hourly wages of workers, an amount equal to an average increase of 20 per cent, at a meeting at Chicago on February 23.

Railroad Enthusiasts Organize Philadelphia Division

A Philadelphia division of the Railroad Enthusiasts, Inc., has been formed under the chairmanship of T. Huston Bateman. The first meeting is to be held April 2, at 8 p.m., in the Philadelphia-Fidelity Trust building. This makes four divisions of this society—New England, New York, Washington and Philadelphia. The New York division has now definitely scheduled an all-day trip by special train, with observation car, over the New Haven for Sunday, April 25, the "high-spot" of which is a ride behind one of that road's streamlined steam locomotives, and in the new streamlined coaches. Visits to Cedar Hill yards, New Haven, Conn.; the Cos Cob electrical plant; and a ride over the freight line from Willimantic to New London are among the planned attractions. The round-trip fare will be $3.

I.C.C. Fails to Suspend Rail Tariffs

By failing to suspend tariffs filed by the railroads which would increase rates on soap, cleansing compound, wall paper, boilers, machinery, and Christmas trees, the Interstate Commerce Commission, on March 19, approved higher rates on this small list of commodities which have been withdrawn from the general rate case now before the commission. Although the amount of additional revenue which will accrue from the increased rates on these commodities is small, it is estimated that the proposed increases on the entire special list would bring the railroads about $10,000,000 annually. The increases will apply to part of a list of commodities which were withdrawn from the general rate case now before the commission. The railroads contend that the increases can be made without exceeding the maximum rates previously prescribed by the commission.

Long Island "Fishermen's Specials"

The Long Island has announced for Sunday, April 4, its first 1937 "Fishermen's Special" from New York and Brooklyn to Canoe Place, Long Island, at the headwaters of Peconic Bay. On May 1 this train will inaugurate its 1937 runs to Montauk where the Long Island has built a new dock at which 38 boats will be available to the fishermen.

The New York-Montauk roundtrip rate on these excursions is $1.50—a 240-mi. ride at "considerably less than a cent a mile." Each season the Long Island awards prizes to anglers who catch the largest of each of nine species of fish.

P.R.R. Safety Awards

The Pennsylvania's Western region, with headquarters at Chicago, was the 1936 winner in that road's eleventh annual employees' safety contest, according to a recent announcement from President M. W. Clement. Among the general divisions, the operating units next largest in size to the regions, the winning place went to the Central Pennsylvania division, with headquarters at Williamsport, Pa. The Western region record was 4.87 reportable accidents per million man-hours, while the Central Pennsylvania division had 3.46 accidents per million man-hours. In the contest between superintendents' divisions the units are classified in three groups, according to the number of man-hours worked. The New York division won first place in group A, the Williamsport division in group B, and the Atlantic division in group C.

Southeast Board Meeting

A 10 per cent increase in carloadings for the second quarter of the year, as compared with the same period in 1936, was forecast for the southeast by commodity committees at the Southeast Shippers' Advisory Board's meeting in Atlanta, Ga., on March 18. Because of emergency movements resulting from the flood peril in the Mississippi valley, shipments of cotton and cotton seed products will be slightly under those of 1936, while volumes equal to last year are anticipated in the shipments of brick and clay products, cement, crushed stone, sand, gravel and slag. Increases are predicted in shipments of citrus and other fresh fruits, vegetables, grain and grain products, furniture, lumber and forest products, iron and steel, miscellaneous commodities, petroleum and products, pulp, paper and products and textiles. The officers of the board were re-elected for the ensuing year. The board re-affirmed its opposition to government ownership of the railways, and to all legislation that would impose upon the railroads a financial burden impossible to bear—specifically the six-hour day, full crews and train length limitations.

Pelley and Harrison Defend Pension Tax

Declaring that the financial terms of the pension agreement "are based upon careful actuarial studies," J. J. Pelley, president of the Association of American Railroads, and George M. Harrison, chairman of the Railway Labor Executives Association, have issued a joint statement commenting upon remarks of Under Secretary of Treasury Magill who last week questioned the adequacy of the proposed tax rates.

"The agreed settlement," says the Pelley-Harrison statement, "and the proposed laws giving effect thereto are based upon careful actuarial studies and calculations made by the Railroad Retirement Board, confirmed by actuaries in the employ of the respective groups, which studies indicate that the tax payments will carry the load. Neither party to the agreement has any reason to doubt that the conclusions of the actuaries whom they consulted were other than correct."

Wage Negotiations in Canada

After four days of secret parleys in Montreal this week between leaders of 117,000 organized Canadian railwaymen the unions' general conference committee prepared for study of the reply given its delegates by railway executives at a meeting last week-end. The unions, then, were believed to have threatened a strike unless higher pay is granted.

Union chiefs held to the "no statement" policy which has blocked every effort to get confirmation of their rumored intentions.

Sudden reopening of negotiations last Saturday after a lapse of several weeks came when the unions asked Sir Edward Beatty and S. J. Hungerford, Canadian Pacific and Canadian National presidents, to join in a conference on the wage question. Secrecy surrounded the session, but the unions, informed sources say, pointed to overwhelming pro-strike sentiment in the recently completed poll of their membership, and suggested that management could better afford to grant concessions than cope with a paralyzing walkout.

Hiawatha Carries 500,000 Passengers

The 500,000th paying passenger to travel on the Hiawatha, streamlined train of the Chicago, Milwaukee, St. Paul & Pacific, since it was placed in service between Chicago and the Twin Cities on May 29, 1935, boarded the train on March 19. Since its inauguration, this train has carried an average of 758 revenue passengers each day. August, 1936, was the biggest month in the train's history, for vacationists, traveling in that month, brought the total to 34,119, a daily average of 1,101. In December the total was 32,111, and in January, 1937, 30,047, an increase of 35 per cent over January, 1936.

Gross earnings of the Hiawatha, and the overflow sections operated last year,

amounted to $3.62 a train mile. Out-of-pocket operating costs, including interest and depreciation, totaled $1.13 per train mile, leaving net earnings of $2.49 per train mile. It is estimated that the train earned approximately $1,000,000 in 1936, before deducting track expenses, taxes, solicitation and miscellaneous costs incident to its operation.

Crossing Accidents in 1936

Fatalities resulting from accidents at highway-railroad grade crossings were greater in 1936 than in any year since 1931, "despite the efforts of the railroads and the various safety organizations to impress upon the public the necessity for exercising greater precaution in approaching and passing over such crossings," says a statement from the Safety Section of the Association of American Railroads.

These 1936 reports showed that 1,786 persons were killed in highway-railroad grade crossing accidents during that year —an increase of 106 compared with 1935, and of 232 compared with 1934. In 1931, there were 1,811 fatalities.

Persons injured in such accidents in 1936 totaled 4,930 compared with 4,658 in 1935 and 4,300 in 1934. Accidents at highway-railroad grade crossings in 1936 involving casualties totaled 4,277, an increase of 344 compared with 1935, and an increase of 549 compared with 1934.

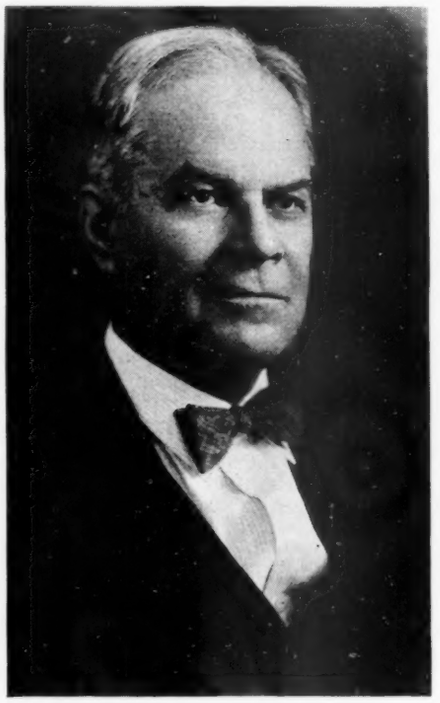
"In the past five years," the statement concludes, "there has been an almost constant increase in the number of fatalities resulting from accidents at grade crossings, although the number of such fatalities is somewhat less than the annual average for the period from 1923 to 1930, inclusive, in each of which years more than 2,000 persons lost their lives in such accidents. That the extensive safety campaigns conducted in recent years by the railroads, as well as motor and other organizations, has brought about an improvement in the situation in respect to grade crossing accidents is shown by the fact that whereas the number of fatalities resulting from highway-railroad grade crossing accidents in the six-year period from 1925 to 1930, inclusive, was 14,141, the total for the six-year period from 1931 to 1936, inclusive, was 9,867."

New Service Bureau Director With I.C.C. Since 1911

Harvey Boltwood, whose appointment as director of the Interstate Commerce Commission's Bureau of Service was announced in the *Railway Age* of March 20, was born in Albany, N. Y., July 6, 1875, and was educated in the public schools there and in Denver, Colo. He attended Colorado College, and continued his studies by correspondence.

Mr. Boltwood began his railroad career with the Union Pacific in 1896 as night engine wiper and call boy, and, continuing in mechanical department work on several railroads, filled various positions up to master mechanic. This railroad service was with the Union Pacific, Denver & Gulf, the Colorado & Southern, the Denver & Rio Grande, and the Union Pacific in Colorado and New Mexico. Also, he was for a period connected with the gold mining and milling industry in Colorado, Idaho and Washington.

When the Bureau of Locomotive Boiler Inspection, Interstate Commerce Commission, was organized in 1911 Mr. Boltwood was one of the original 50 district inspectors, and remained with that organization until 1918 when he was transferred to the United States Railroad Administration, Division of Operation, as supervisor of equipment. When the railroads were returned to private operation he was appointed mechanical engineer with the Mechanical Department, Division of Liquidation Claims of the Railroad Administration. In 1923 he returned to the Bureau of Locomotive Inspection, I.C.C., and in April, 1925, was appointed assistant director, Bureau of Service, which position he filled until the present appointment as director of that Bureau.



(c) Harris & Ewing

Harvey Boltwood

C. N. R. to Participate in Transcontinental Air Service

Canada's transcontinental air service is to be placed in the hands of the Canadian National, according to a statement made to the House at Ottawa last week by Hon. C. D. Howe, minister of transport, in a brief explanation of his proposed legislation in that connection.

It will be a private corporation organized by the railway, and will have a capitalization of about $1,750,000 which stock will be underwritten by the railway. The Government will ask those concerned in the service to signify their interest in the enterprise and what they are prepared to contribute to it in experienced personnel and equipment. The proposed company will fly only the main artery of traffic between East and West, and such other arteries of traffic as are designated by the Government as being of national importance.

This company will be given an exclusive contract to carry mails, passengers and express over these specified routes, said Mr. Howe. In the initial stage of the company, in addition to having an airmail contract at a rate competitive with similar services on this continent, its deficits will be paid by the Government for two years, the period during which the personnel will be perfected. At the end of that time it is expected an efficient service will be in operation. Subsequently the company will receive an air mail contract, the basis of which will be determined from the operations of the previous year.

"It is organized to perform a certain national service," said Mr. Howe," and it is expected that that service will be performed at or near cost."

Canada was obligated, added Mr. Howe, to share in the proposed trans-Atlantic service, and in this connection Canada had undertaken to be ready to fly the mails across this country concurrently with their being flown across the Atlantic.

Steam Railway Accident Statistics, December, 1936

The Interstate Commerce Commission's completed statistics of steam railway accidents for the month of December 1936, now in preparation for the printer, will show:

Item	Month of December 1936	Month of December 1935	12 mos. ended with December 1936	12 mos. ended with December 1935
Number of train accidents	758	654	8,286	6,551
Number of casualties in train, train-service and non-train accidents:				
Trespassers:				
Killed	187	142	2,738	2,712
Injured	162	142	2,694	3,030
Passengers on trains:				
(a) In train accidents*:				
Killed	....	....	7	1
Injured	78	16	742	367
(b) In train-service accidents:				
Killed	....	....	10	17
Injured	173	150	1,709	1,505
Travelers not on trains:				
Killed	2	....	18	8
Injured	79	73	787	645
Employees on duty:				
Killed	68	63	669	555
Injured	1,974	1,540	21,871	16,348
All other nontrespassers†:				
Killed	248	235	1,956	1,814
Injured	759	799	6,903	6,185
Total—All classes of persons:				
Killed	505	440	5,398	5,107
Injured	3,225	2,720	34,706	28,080

* Train accidents are distinguished from train-service accidents by the fact that the former cause damage of more than $150 to railway property.

† Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties *for all classes of persons, including both trespassers and nontrespassers*, were as follows:

Number of accidents.	535	525	4,277	3,933
Persons:				
Killed	225	220	1,786	1,680
Injured	590	606	4,930	4,658

C. N. R. Refinancing

Acrimonious exchanges marked the slow progress through Committee of the Whole this week in the House at Ottawa of the bill of Hon. C. D. Howe, minister of transport, to recast the debt set-up of the Canadian National. Much of the argument was over the section which would write down from $643,000,000 to $270,000,000 certain Dominion advances to the railway, and the conversion of the latter amount into certificates to be held by a securities commis-

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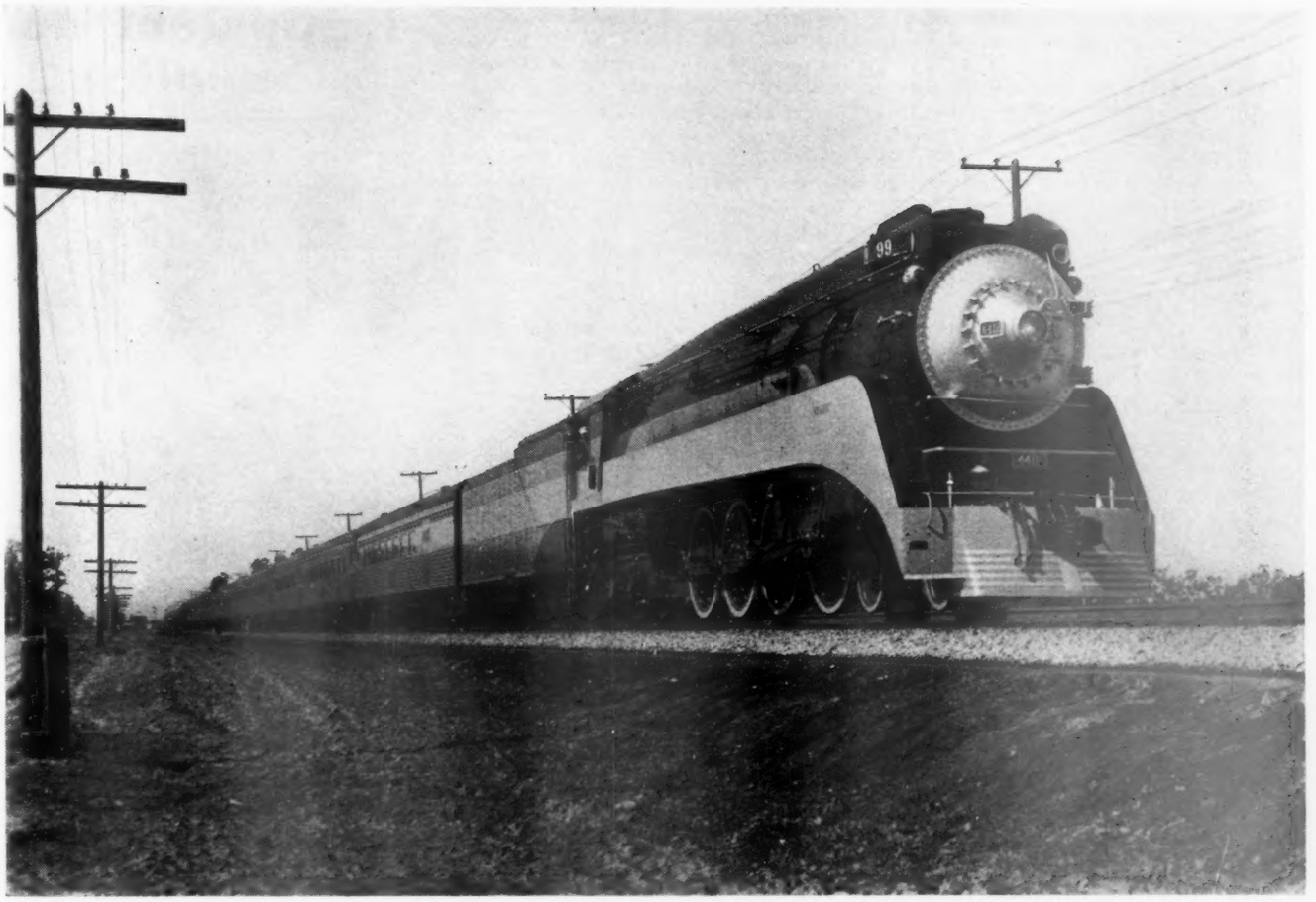

STEAM is still SUPREME

The Southern Pacific Company chose Lima built steam locomotives to haul the new De Luxe *Daylight* Specials between San Francisco and Los Angeles.

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

sion to be created by the bill. The bill was reported out of committee and now stands for third reading.

A charge was made by the Conservative leader, Rt. Hon. R. B. Bennett, that this move was a "juggling" of public accounts, an evasion of the Federal Audit Act, and an unsuccessful attempt to conceal the real facts of the situation. He admitted that his protest would be of little real use, as the Government commanded a large majority and the legislation was bound to pass.

Countering this charge Mr. Howe denied the legislation did any violence to principles of honesty in public accounting, and declared it only represented a write-down of capital such as the English government railways had done.

At another period in the discussion Mr. Bennett, after the legislation had been referred to as "unprecedented," declared that he would "use a stronger word" if it were not that intelligent men were responsible for it.

"I certainly protest," Mr. Bennett said, when the section scaling down the Government's advances to the C.N.R. came up for discussion, "against changes being made in the public accounts of the country that fail to show the true state of the accounts of the country. When you have to say you are doing something that the Audit Act of this country does not permit to be done, you say something that carries its own condemnation on its very face."

There was no such thing as "duplication" between the accounts of the country and the accounts of the railway, Mr. Bennett continued. The accounts of the railway showed the receipts of money from the Treasury; the accounts of the country showed the issue of the securities by which the money was raised. The C.P.R. showed the accounts of its subsidiaries in precisely the same form as did Canada, the conservative leader cited. The parent company showed the issue of its securities in its books, the subsidiary showed the receipt of the cash resulting from the sale of the securities in its books.

Mr. Howe, commented that no one had claimed that there was a duplication between the railway debt and the public accounts. The contention was that there was a duplication between the railway debt and the debt of Canada.

After a number of the remaining sections were carried on division another snag was struck when the committee reached the appendix to public accounts showing assistance to all railways. W. A. Walsh (Conservative Mount Royal) remarked that this section provoked a heated debate in the railway committee and he added, "This section has a decided political tinge. It is unfair to the Canadian National and to the Canadian Pacific."

"The Minister will recall," said Mr. Walsh, "the turn the discussion took in the committee when the suggestion was made that an appendix should be added to the public accounts of Canada to show everything that had been granted to the railway systems from the time of their inception. There could be no motive other than political in a suggestion of that nature."

Finally Mr. Walsh, after declaring that this did not belong to the bill and that "it sticks up like a sore thumb," moved that it be deleted, but in the confusion of further discussion it was not put to a vote and the provision was carried on division and the bill reported out of committee.

* * * *

New Cabooses on the Chicago, Milwaukee, St. Paul & Pacific

Differing in two major respects from its predecessors, this caboose is one of a fleet of 700 being placed in service on the Milwaukee. Most radical innovations are the removal of the familiar cupola and installation of side "bays." Higher freight cars obscured the view of cupola watchers while the new side windows permit checking the entire length of the train. The new cabooses are painted aluminum, both inside and out.

Equipment and Supplies

LOCOMOTIVES

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE, is inquiring for four locomotives of the 4-8-4 type.

THE YOUNGSTOWN & NORTHERN has bought four 900-hp. Diesel-electric locomotives; two from the American Locomotive Company and two from the Electro-Motive Corporation.

FREIGHT CARS

THE LEHIGH & NEW ENGLAND is inquiring for 100 gondola cars and 100 covered hopper cement cars, of 70 tons' capacity.

THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC is asking for bids on or before April 9, for 5,600 freight cars, as follows:

No.	Type	Capacity (tons)
2,500	Steel-sheathed 40-ft. 6-in. box	40
500	Steel-sheathed 40-ft. 6-in. automobile	40
1,100	Steel hopper	50
1,250	Drop bottom high side, steel gondola	50
250	Low side steel gondola	50

THE CENTRAL OF GEORGIA has ordered 600 freight cars, including 500 box cars of 50 tons' capacity from the Pullman-Standard Car Manufacturing Company, and 100 steel-sheathed auto-furniture cars of 50 tons' capacity and 50 ft. long, from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of March 20.

PASSENGER CARS

THE CANADIAN PACIFIC has placed orders for 30 passenger train cars including 21 first class coaches, 83 ft. 10½ in. long, one coach 73 ft. 10 in. long, and one cafe parlor car; all of the frames for these cars are to be built by the National Steel Car Corporation, and the cars finished at the Angus shops of the Canadian Pacific. Two baggage and express cars and five mail and express cars are to be built by the National Steel Car Corporation.

IRON AND STEEL

THE CANADIAN PACIFIC is placing orders for rail for 1937 installation as follows: A total of 20,880 tons of 100-lb. R.E. section is being purchased of which 14,200 tons is to be supplied by the Algoma Steel Corporation and 6,680 tons by the Dominion Steel & Coal Corporation; in addition 8,710 tons of 85-lb. C.P. section is to be rolled by the Algoma Steel Corporation. Of this total of 29,590 tons, 10,480 tons of 100-lb. rail are to be used on eastern lines in Canada and 10,400 tons of 100-lb. rail and the 8,710 tons of 85-lb. rail on western lines.

NEW YORK CENTRAL.—Contracts have been let for 450 tons of steel to the Lehigh Structural Steel Company to be used on the section of West Side Improvements between 177th street and 180th street, New

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NO. 8 OF A SERIES OF FAMOUS ARCHES OF THE WORLD

THE ARCH AT ORANGE

Standing within a circle of trees just outside the little town of Orange in Southern France, the Arch recalls the day, when known as Arausio Secundanorum, it was an important Roman settlement. » » » The origin of the Arch itself is a matter of debate, but it is generally agreed that it was erected in honor of Tiberius about 21 A.D. » » » It is composed of three arches and measures 72 feet in height, 69 feet in width, and 26 feet in depth. It is beautifully decorated, the top panel picturing a battle scene with trophies, shields, flags, weapons and captives grouped as a mass.

* * * * *

The Security Sectional Arch was among the first economy and efficiency devices for improving locomotive performance. Since its introduction by the American Arch Company, Incorporated, it has saved many millions of dollars in fuel and is today an essential factor in locomotive operation.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

York City, and for 650 tons of steel to the American Bridge Company for work on the section from 186th street to 191st street, New York City. The Duffy Construction Corporation, New York, has these general contracts. A contract has also been let to the Bethlehem Steel Company for 8,500 tons of steel for the section between 135th street and 146th street. The P. T. Cox Contracting Company, New York, has the general contract for this section.

Construction

ATCHISON, TOPEKA & SANTA FE.—This company is planning the immediate construction at Ft. Worth, Tex., of a two-story brick and concrete freight terminal, 36 ft. by 327 ft. The new structure will replace existing facilities.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the P. J. Walker Company, San Francisco, Cal., for the construction of a two-story rail and bus passenger terminal on the site of the old Argonaut hotel in San Francisco. The new structure will be of structural steel and concrete construction and where it faces on Fourth street and Pioneer place the exterior will be finished with terra cotta tile in variegated colors with white metal ornamentation. The first floor, which will occupy 29,000 sq. ft. of space, will include a ticket concourse, the main waiting room, rest rooms, loading and unloading platforms and bus driveway areas. The second floor will house offices and facilities for the handling of baggage. The basement, occupying 20,000 sq. ft. of space, will serve as a company garage and for housing the heating plant and other mechanical facilities.

NEW YORK CENTRAL.—The Duffy Construction Corporation, New York, has been given the general contract for work on the section of the West Side Improvements from 186th street to 191st street, New York City.

UNION PACIFIC.—This company is planning to construct an extensive hotel development in Sun Valley, Idaho, which will supplement its present Sun Valley Lodge. The new development, which will be designed to appeal to persons with modest purses, will embody facilities for the enjoyment of both summer and winter sports. This project, which is to be completed in advance of next winter's sport season, will involve the construction of a large hotel unit, to be known as Challenger Inn, which will take the form of a mountain village of Austrian-Swiss architecture. The buildings, embodying restaurants and cafes, a variety of shops, a motion picture theatre, billiard rooms and bowling alleys, will be grouped informally about a village square in which will be located a skating rink and an open-air swimming pool. Facilities for guests will embody 200 double rooms, 100 of which will have baths. Bachelor quarters will be provided in a separate building.

Supply Trade

H. W. Porter & Co., Inc., Newark, N. J., has been appointed distributor in the Newark area, for the **General Refractories Company,** Philadelphia, Pa.

P. B. Baldwin, general sales manager of the **Collins & Aikman Corporation,** New York, has been elected a member of the board of directors.

The T-Z Railway Equipment Company, Chicago, has moved its offices from 310 South Michigan avenue to 8 South Michigan avenue.

E. T. Schroeder, 1205 Syndicate Trust building, St. Louis, Mo., has been appointed sales agent for the **Eagle-Picher Sales Company,** Cincinnati, Ohio, representing its line of insulating products for railway sales in St. Louis and the Southwest.

Charles R. Hook, president of the **American Rolling Mill Company,** Middletown, Ohio, has been elected a director of the **Rustless Iron & Steel Corporation,** Baltimore, Md. The American Rolling Mill Company, which recently acquired an interest of approximately 48 per cent in Rustless Iron & Steel Corporation, is also represented on the board by **Calvin Verity,** executive vice-president, and **W. W. Sebald,** vice-president.

Fairbanks, Morse & Co.

The annual report of Fairbanks, Morse & Co. shows a net profit of $2,252,941 for 1936, as compared with $1,465,779 for 1935. Sales in 1936 amounted to $26,827,891, compared with $18,221,228 in 1935, a large portion of the increase being due to Navy and government business, the profit on which was abnormally low because of the special nature of the business and the terms of the Vinson Act under which it was taken. Depreciation amounted to $793,897, compared with $628,030 in 1935. The current assets of the company totaled $17,005,081, as compared with $14,479,223 in 1935, while total current liabilities amounted to $3,362,517 in 1936, and $2,143,008 in 1935.

A summary of the consolidated income and earned-surplus accounts for the year ended December 31, 1936, follows:

Income Account

	1936	1935
Net sales	$26,827,891	$18,221,228
Cost of sales, selling, administrative and general expenses, excluding depreciation	23,449,696	16,150,437
Net profit from operations before depreciation, interest on debentures, and federal income tax	$3,378,195	$2,070,791
Miscellaneous Income:		
Interest received	194,833	171,780
Other income including earnings of non-manufacturing subsidiaries before depreciation and federal income tax	221,270	221,625
Net profit before depreciation, interest on debentures and federal income tax	$3,794,298	$2,464,196
Deduct:		
Provision for depreciation	793,897	628,030
Interest on debentures	288,424	273,434
Federal income tax (including $204,236.03 for surtax on undistributed income)	612,000	230,011
Net profit (excluding Municipal Acceptance Corporation)	$2,099,977	$1,332,721
Net income of Municipal Acceptance Corporation	152,964	133,058
Consolidated net profit	$2,252,941	$1,465,779

Earned-Surplus Account

Balance, December 31	$5,693,290	$3,926,851
Add:		
Consolidated net profit for the year 1936, as above	2,252,941	1,465,779
Surplus previously appropriated for redemption of 7% preferred stock	.....	662,600
	$7,946,231	$6,055,230
Deduct:		
Cash dividends paid—		
On 6% preferred stock, $6 per share	$381,674	.....
On common stock, $1.25 per share	631,608	.....
Dividends paid on 7% preferred stock	.....	$229,792
Cash paid to 7% preferred stockholders as part of reclassification of stock	.....	131,315
Premium on debentures purchased—		
5% debentures called for redemption	81,578	.....
4% debentures purchased for sinking fund	2,012	833
Balance, December 31	$6,849,359	$5,693,290

Safety Car Heating and Lighting Company

The Safety Car Heating and Lighting Company reported for the year ended December 31, 1936, a net profit of $728,840 as compared with a 1935 net of $512,681. Net dividend disbursements during the year amounted to $564,156 leaving $164,684 to be added to the surplus. The latter totaled $2,058,579 at the close of last year as compared with $1,893,895 on December 31, 1935.

The consolidated surplus account for the year ended December 31, 1936, follows:

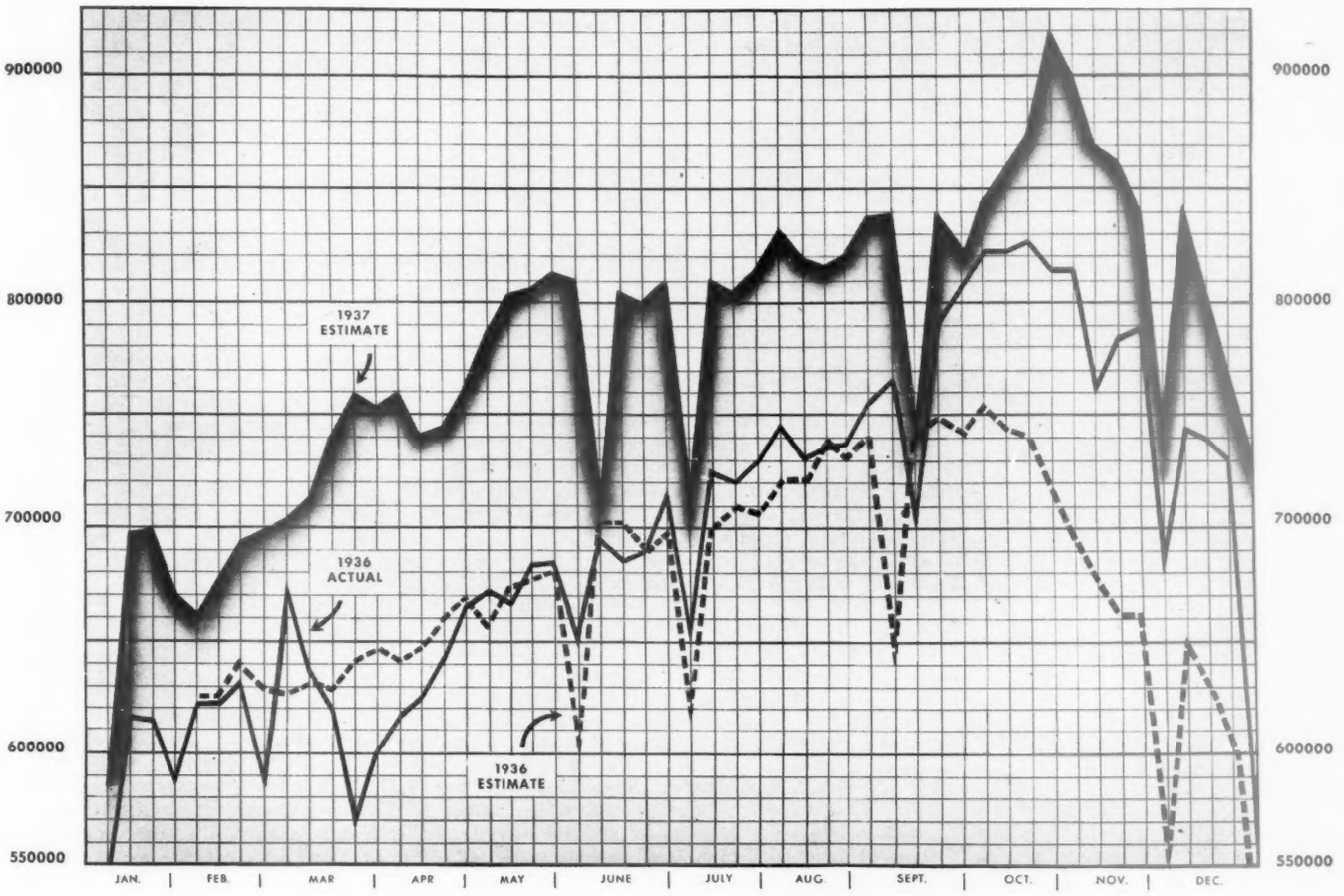
Surplus—January 1, 1936			$1,893,895
Gross Profit for year		$1,172,678	
Less:			
Obsolete Material written off	$83,882		
Reserved for Taxes	120,000		
Reserved for Contingencies	60,000		
Reserved for Investment in Affiliated Company	161,000		
Depreciation on Assets acquired subsequent to December 31, 1933	18,956		
		443,838	
Net Profit		$728,840	
Deduct:			
Dividends paid during year 1936 aggregating $6.00 per share	$591,720		
Less Proportion thereof applicable to Treasury Stock	27,564		
		564,156	
			164,684
Surplus—December 31, 1936			$2,058,579

General American Transportation Corporation

The annual report of the General American Transportation Corporation and its subsidiaries for 1936 shows a net profit of $2,966,414, as compared with $2,208,924 in 1935. During the year the financial position of the company was strengthened

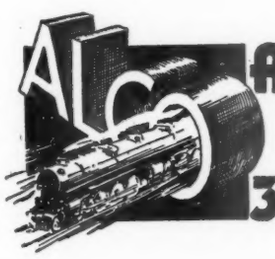
Continued on next left-hand page

Still "Going Up!"



WEEKLY FREIGHT CAR LOADINGS
ESTIMATE AND ACTUAL FOR 1936
ESTIMATE FOR 1937

Both estimates were made by
JOHN L. KERR
An Expert Statistician



AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET · NEW YORK · N·Y

through the raising of additional capital for use in the business, and through securing lower interest rates by the refunding of most of the equipment trust notes. The end of 1936 marked the beginning of a fair buying movement of rolling stock by railroads, with the result that the plants are operating at a high percentage of their capacities and have orders booked which will enable them to continue on this basis for several months. Current assets as of December 31, amounted to $17,177,218, compared with current liabilities of $5,153,469. The consolidated summary of income follows:

	1936	1935
Gross income from sales, rentals, etc.	$38,696,064	$27,342,081
Cost of sales and expenses (exclusive of depreciation	28,823,576	19,230,743
Operating profit — before depreciation	$9,872,488	$8,111,338
Other income:		
Dividends received	$195,877	.....
Interest earned	113,102	.....
Profit on sale of securities	53,705	.....
Amortization of premium on ten year notes	70,583	.....
Sundry	135,181	.....
Dividends, interest and other income	.....	$464,125
	$10,440,936	$8,575,463
Deductions from income:		
Depreciation	$4,859,316	$4,501,750
Amortization of debt discount and expense	206,664	146,675
Interest paid	1,483,062	1,501,953
Federal income tax	561,142	95,643
Other charges	34,737	61,158
Dividends on preferred stock of subsidiaries	.....	59,360
Net income (before provision for G.A.T. Compensation plan)	$3,296,015	$2,208,924
Provision for issuance of 4,492 shares of company unissued stock in accordance with G.A.T. Compensation Plan approved by stockholders April 10, 1934 (computed at December 31, 1936 market price of $73,375 per share)	329,601	.....
Net income	$2,966,414	$2,208,924

Consolidated Surplus

	1936	1935
Capital:		
Balance — December 31, 1935	$36,887,790	$36,288,815
Additions to surplus:		
Excess of cash proceeds (less expenses) over par value of the $5 per share of stock issued	6,726,679	597,840
Excess over cost of parent company stock disposed of by subsidiary	.....	1,134
Balance — December 31, 1936	$43,614,469	$36,887,789
Earned:		
Balance — December 31, 1935	$14,257,703	$13,612,226
Additions to surplus:		
Net income for year ended December 31	2,966,414	2,208,924
Parent company interest in earnings since acquisition of subsidiary heretofore not consolidated, in excess of dividends received	.....	735,804
	$17,224,117	$16,556,954
Charges to surplus:		
Cash dividends on common stock	$2,162,406	$1,449,119
Allocation to general reserves of interest in earnings since acquisition of subsidiary heretofore not consolidated in excess of dividends received	.....	735,804
Premiums paid on retirement of preferred stock of subsidiaries	.....	114,329
Balance — December 31, 1936	$15,061,711	$14,257,702

Financial

ARKANSAS VALLEY INTERURBAN.—*Reorganization.*—This company has filed a plan of reorganization with the United States District Court for the District of Kansas, Second division, and with the Interstate Commerce Commission in Washington, D. C.

CENTRAL ARKANSAS & EASTERN.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon its line extending from Rice Junction, Ark., to Hazen, 17.24 miles, and the trustee of the St. Louis Southwestern to abandon operation of the line.

CHICAGO & NORTH WESTERN.—*Equipment Trust.*—This company has rejected as unsatisfactory bids received on its proposed issue of $4,460,000 of 10-year, 2½ per cent equipment trust certificates.

DENVER & RIO GRANDE WESTERN.—*Equipment Trust Certificates.*—The trustees have applied to the Interstate Commerce Commission for authority to assume liability for $2,175,000 of 3¼ per cent equipment trust certificates, maturing in 15 equal annual installments of $145,000 on April 1, from 1938 to 1952.

DULUTH, SOUTH SHORE & ATLANTIC.—*Reorganization.*—The Interstate Commerce Commission, Division 4, has ordered that Edward A. Whitman be paid $5,000 a year for compensation as a trustee of this company, and that James L. Homire be paid $10,000 a year as a trustee and counsel for the trustees.

FONDA, JOHNSTOWN & GLOVERSVILLE.—*Annual Report.*—The annual report of this company for 1936 shows net deficit, after interest and other charges, of $134,062, as compared with net deficit of $138,863 in 1935. Selected items from the income account follow:

	1936	1935	Increase or Decrease
RAILWAY OPERATING REVENUES	$565,212	$571,124	−$5,912
TOTAL OPERATING EXPENSES	506,377	522,293	−15,916
NET REVENUE FROM OPERATIONS	58,835	48,831	+10,004
Taxes	*38,043	28,594	+9,449
Railway operating income	20,792	20,237	+555
Net Rents—Dr.	8,290	12,997	−4,707
NET RAILWAY OPERATING INCOME	12,502	7,240	+5,262
Non-operating income	38,026	39,827	−1,801
TOTAL INCOME	50,528	47,067	+3,461
Rent for leased roads	6,600	6,600	....
Interest on funded debt	138,557	132,967	+5,590
TOTAL FIXED CHARGES	158,217	147,864	+10,353
NET INCOME (deficit)	$134,062	$138,863	+$4,801

* Increased tax accruals due to unemployment insurance and also gasoline taxes previously charged operating expenses.

LEHIGH & NEW ENGLAND.—*Annual Report.*—The 1936 annual report of this company shows net income, after interest and other charges, of $397,860, compared with net income of $433,709 in 1935. Selected items from the income statement follow:

	1936	1935	Increase or Decrease
RAILWAY OPERATING REVENUES	$3,962,590	$3,432,725	+$529,865
Maintenance of way	419,244	396,241	+23,002
Maintenance of equipment	864,108	711,789	+152,319
Transportation	1,393,171	1,256,646	+136,525
TOTAL OPERATING EXPENSES	2,933,613	2,593,599	+340,014
Operating ratio	74.03	75.56	−1.53
NET REVENUE FROM OPERATIONS	1,028,976	839,125	+189,851
Railway tax accruals	227,031	83,391	+143,640
Railway operating income	801,945	755,541	+46,403
Net rents—Cr.	5,367	67,255	−61,887
NET RAILWAY OPERATING INCOME	807,312	822,797	−15,484
Non-operating income	26,843	27,199	355
TOTAL INCOME	834,156	849,996	−15,839
Interest on funded debt	390,488	388,804	+1,683
TOTAL FIXED CHARGES	397,461	393,944	+3,517
NET INCOME	$397,860	$433,709	−$35,848

LOUISIANA & NORTH WEST.—*Reorganization.*—The Bureau of Finance of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that the commission approve an amended plan of reorganization for this company.

NEW YORK CENTRAL.—*Equipment Trust Certificates.*—The Interstate Commerce Commission, Division 4, has authorized this company to assume liability for $4,290,000 of 2¼ per cent equipment trust certificates, maturing in 15 equal annual installments of $286,000 on March 15, from 1938 to 1952. The issue has been sold at 96.04 to a group composed of Evans, Stillman & Co., Harris, Hall & Co., Inc., and Dominick & Dominick, making the annual cost to the company approximately 2.82 per cent.

Debentures.—Stockholders will be asked to authorize an issue of $41,097,000 convertible 3¼ per cent debentures (to be offered first to stockholders). The proceeds of the issue will be used to retire such of the company's 6 per cent convertible bonds of 1944 as have not been converted and to redeem other outstanding indebtedness.

New Director.—T. Jefferson Coolidge of Boston has been elected to the directorate, succeeding Gordon Abbott, deceased.

NEW YORK, NEW HAVEN & HARTFORD. — *Indebtedness.* — Undisputed principal amounts totaling $266,309,264.80, representing all or a portion of the principal amounts of certain designated claims against the New Haven and the Old Colony, were allowed in an order signed last week by Judge Carroll C. Hincks in the United States District Court at New Haven, in the companies' reorganization proceedings. The order of allowance was issued "upon due consideration of the verified report and recommendations of the trustees." The great bulk of this amount represents claims in behalf of the holders of bonds and debentures of the two roads

Continued on next left-hand page

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ONLY IN GOODYEAR—THESE MONEY-SAVING FEATURES!

- Patented Pre-Shrunk Supertwist Cord Construction for greater body strength, protection against blowouts.
- Heat-resisting rubber in both tread and body.
- Cooler running High Profile Construction.
- High Shoulder Tread Shape for slower, more even wear.
- Braided Wire Beads to protect against swaying loads and overloads.

No wonder more tons are hauled on Goodyear Truck Tires than on any other kind.

WITH THESE TOUGHER, STURDIER TIRES FOR FREIGHTERS

Yes, you CAN cut your tire costs and cut them plenty. Truck operators everywhere have proved it. Hundreds of them.

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and their underlying companies, the largest item being one of $138,819,250, representing the New Haven's first and refunding mortgage. Other major claims allowed in the Court order include:

Treasurer of the State of Connecticut, as trustee under the Housatonic Railroad Consolidated Mortgage, $2,819,000; New York, Providence & Boston General Mortgage, $1,00,000; Naugatuck Railroad First Mortgage, $2,500,000; Danbury & Norwalk First Refunding Mortgage, $350,000; Boston & New York Air Line First Mortgage, $3,775,000; and New Haven & Northampton Refunding Consolidated Mortgage, $2,400,000; total $12,844,000.

The First National Bank of Boston, as successor Trustee under the Indenture of Trust of New York & New England to American Loan and Trust Company, Trustee, $1,500,000.

Bankers Trust Company, as successor trustee under Dutchess County Railroad First Mortgage, $282,000.

Bankers Trust Company, as successor trustee under New England Railroad Consolidated Mortgage, $17,500,000.

Rhode Island Hospital Trust Company, as Trustee under Providence Terminal First Mortgage, $3,922,000.

United States Trust Company of New York, as trustee under First Mortgage of Harlem River & Port Chester and the New Haven, $15,000,000.

City Bank Farmers Trust Company, as Trustee under Central New England First Mortgage, $12,054,000.

Irving Trust Company, as Trustees under Collateral Trust Indenture of The New York, New Haven and Hartford Railroad Company, $15,302,600.

Treasurer of the State of Connecticut as Trustee under the Stafford Springs Street Railway First Mortgage, $400,000.

The New York Trust Company, as Trustee under Mortgage of Worcester & Connecticut Eastern, $345,000.

Howard S. Palmer, President of the New Haven, on behalf of the New Haven 4 per cent debentures, due May 1, 1957, $15,010,000.

Howard S. Palmer, President, on behalf of Providence Securities Company 4 per cent debentures, $1,748,000.

Bank of Manhattan Company, $1,000,000.

The Chase National Bank, $4,750,000.

The First National Bank of Boston, $4,200,000.

Irving Trust Company, $2,350,000.

The National Shawmut Bank of Boston, $2,000,000.

State Street Trust Company, Boston, $175,000.

The Second National Bank of Boston, $5.00,000.

The Merchants National Bank of Boston, $500,000.

The National Rockland Bank of Boston, $100,000.

Union Trust Company of Springfield, $200,000.

Old Colony Trust Company, as trustee under Old Colony First Mortgage and Deed of Trust, $14,348,000.

Chase National Bank, New York, $500,000.

First National Bank of Boston, $500.000.

National Shawmut Bank of Boston, $400,000.

The last four items represent claims against the Old Colony, and the rest against the New Haven.

READER. — *Reorganization.* — The Interstate Commerce Commission, Division 4, has approved an amended plan of reorganization of this company which would give a first mortgage lien on the property to the holder of notes which were given to satisfy a judgment for personal injury to an employee.

TENNESSEE CENTRAL.—*Annual Report.*—The 1936 annual report of this company shows net income, after interest and other charges, of $176,785, as compared with net income of $115,292 in 1935. Selected items from the Income Statement follow:

	1936	1935	Increase or Decrease
Average Mileage Operated	286.93	286.93	.....
RAILWAY OPERATING REVENUES	$2,514,190	$2,250,933	+$263,257
Maintenance of way	417,619	393,117	+24,502
Maintenance of equipment	353,854	328,814	+25,040
Transportation	829,730	748,554	+81,176
TOTAL OPERATING EXPENSES	1,784,348	1,625,276	+159,072
Operating ratio	70.97	72.20	−1.23
NET REVENUE FROM OPERATIONS	729,842	625,656	+104,186
Railway tax accruals	90,560	65,191	+25,369
Railway operating income	639,281	560,417	+78,864
Equipment rents—Net Dr.	161,649	144,206	+17,443
Joint facility rents—Net Dr.	5,780	5,879	−99
Non-operating income	11,105	10,743	+362
GROSS INCOME	650,387	571,160	+79,227
Rent for leased roads and equipment	62,504	62,504	.....
Interest on funded debt	217,162	223,345	−6,183
TOTAL DEDUCTIONS FROM GROSS INCOME	473,602	455,867	17,735
NET INCOME	$176,785	$115,292	+$61,493

Dividends Declared

Norfolk & Western.—Preferred, $1.00, payable May 19 to holders of record April 30.

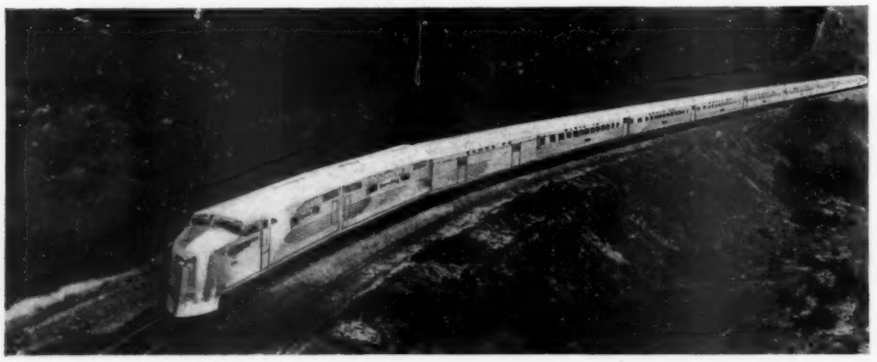
Pullman, Inc.—37½¢, quarterly, payable May 15 to holders of record April 24.

Reading.—First Preferred, 50¢, quarterly, payable June 10 to holders of record May 20.

Average Prices of Stocks and Bonds

	Mar. 23	Last week	Last year
Average price of 20 representative railway stocks..	58.71	60.77	48.35
Average price of 20 representative railway bonds..	82.21	83.80	80.71

* * * *



Artist's Drawing of the Atchison, Topeka & Santa Fe's Super Chief

This new stainless-steel train will be placed in service this spring between Chicago and Los Angeles. Built by the Edward G. Budd Manufacturing Company of Philadelphia, it consists of nine coaches hauled by a two-unit 3,600-Hp. Electro-Motive Diesel-electric locomotive.

Railway Officers

EXECUTIVE

W. G. Carl, chief of the rates of pay bureau of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed assistant to vice-president, succeeding the late **F. E. Blaser.**

OPERATING

John F. Alsip has been appointed to the newly-created position of assistant superintendent of the Idaho division of the Northern Pacific, with headquarters at Spokane, Wash.

J. M. Shanaphy, special representative in the office of the vice-president in charge of traffic of the Railway Express Agency, has been appointed superintendent of transportation, with headquarters at Philadelphia, Pa., effective February 8.

W. B. Porter, inspector of transportation on the Louisville & Nashville with headquarters at Louisville, Ky., has been appointed assistant director of personnel, with the same headquarters, to succeed **T. B. Turner,** deceased.

V. H. Wilson, acting superintendent of the Los Angeles division of the Atchison, Topeka & Santa Fe with headquarters at San Bernardino, Cal., has been appointed superintendent of the same division. **O. L. Gray,** acting superintendent of the Albuquerque division with headquarters at Winslow, Ariz., has been appointed superintendent of that division.

W. J. Weil has been appointed supervisor of safety of the Delaware, Lackawanna & Western, with headquarters at Scranton, Pa. Mr. Weil, who was a Lackawanna trainman, served also as local chairman, vice-chairman of the New Jersey legislative board and secretary of the general grievance committee of the Brotherhood of Railroad Trainmen at the time of his promotion.

Victor J. Bedell, chief engineer of the New Orleans Public Belt, New Orleans, La., who has also been elected general manager, as reported in the *Railway Age* of March 6, was born on August 23, 1884, at Woodstock, N. B. He attended the University of New Brunswick, graduating in 1905 with an engineering degree, and in 1932 obtained the degree of civil engineer from Tulane university at New Orleans. He entered railway service in 1904 with the Bangor & Aroostook and later served with the Chicago, Milwaukee, St. Paul & Pacific and the Kansas City Southern. From 1908 to 1915, he was engaged in municipal engineering work, then joining the Interstate Commerce Commission. In 1916 Mr. Bedell entered the service of the Southern Pacific Lines in Texas and Louisiana as field engineer, later serving as division engineer and cost en-

(Continued on page 577)

Table of Freight Operating Statistics appears on next left-hand page

DIESEL-ELECTRICS DO MORE WORK AT LESS COST

JUST COMPARE THE WORK THEY'LL DO

PUT diesel-electrics on your switching job—give them a 24-hour shift—just change crews. These switchers will give you from 7000 to 8000 hours of real service a year.

One railroad gives us this record on its 14 diesel-electrics. They *averaged* 7250 hours a year—their availability for duty was 85 per cent. That's really staying on the job! Operating costs were less than half those of steam switchers in comparable service.

No time out for starting fires, getting up steam, cleaning fires, and making frequent trips to the coal tipple and water spout—when you use diesel-electrics. That's why they do more work.

And for the best performance, be sure your diesel-electrics are powered with General Electric drive.

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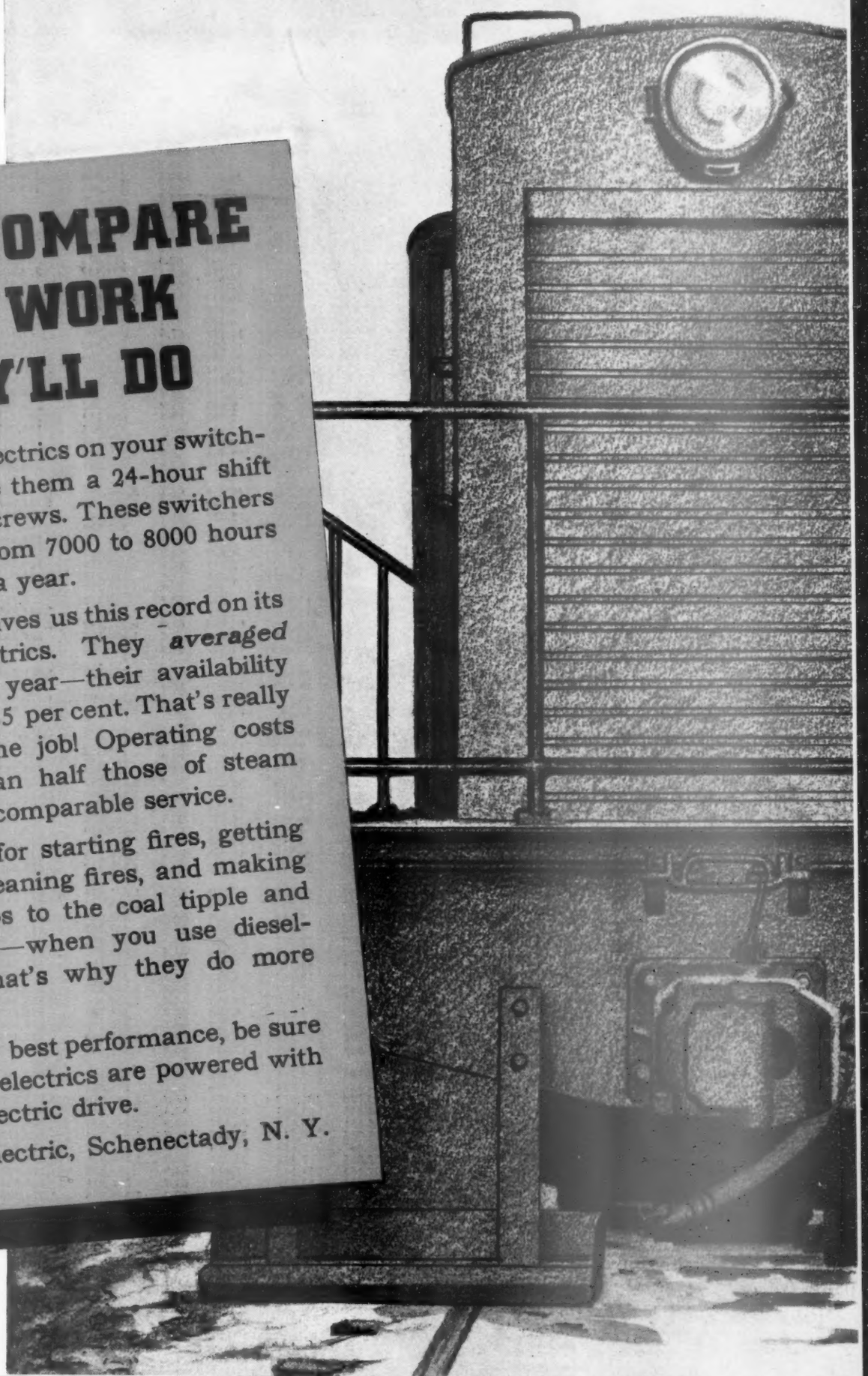


250-27

GENERAL ELECTRIC

Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of January.

Region, road, and year	Miles of road operated	Train-miles	Locomotive miles: Principal and helper	Locomotive miles: Light	Car-miles: Loaded (*thousands*)	Car-miles: Per cent loaded	Ton-miles (*thousands*): Gross, excluding locomotives and tenders	Ton-miles (*thousands*): Net, revenue and non-revenue	Number of road locomotives on line: Serviceable: Not stored	Number of road locomotives on line: Serviceable: Stored	Number of road locomotives on line: Unserviceable	Number of road locomotives on line: Per cent unserviceable
New England Region:												
Boston & Albany....1937	373	153,125	158,099	9,942	3,451	68.2	184,717	65,767	58	4	30	32.6
1936	373	144,487	151,998	12,044	3,081	69.8	161,050	58,164	54	3	35	38.0
Boston & Maine....1937	1,957	288,522	325,262	29,398	10,367	70.1	571,958	219,875	126	..	139	52.5
1936	1,972	281,405	316,329	31,291	9,097	69.5	504,366	191,299	124	3	167	56.8
N. Y., New H. & Hartf....1937	2,010	356,037	444,883	24,097	12,547	67.7	679,620	258,565	190	4	83	29.6
1936	2,038	356,146	434,777	23,202	10,815	65.6	600,492	227,378	193	4	95	35.2
Great Lakes Region:												
Delaware & Hudson....1937	830	231,515	316,604	36,317	8,339	66.9	519,439	255,319	96	132	42	15.6
1936	831	215,375	297,049	37,637	7,004	64.2	444,713	213,300	120	113	29	11.1
Del., Lack. & Western....1937	983	390,002	432,099	58,695	12,942	68.4	757,073	304,638	144	2	88	37.6
1936	992	371,572	422,046	60,957	11,256	65.4	675,382	272,890	159	1	80	33.8
Erie (incl. Chi. & Erie)....1937	2,284	713,968	760,732	39,867	32,197	69.2	1,838,409	736,352	229	42	200	42.5
1936	2,298	665,763	707,368	40,931	26,854	67.4	1,562,619	623,361	230	29	220	45.9
Grand Trunk Western....1937	1,027	260,996	264,677	2,741	6,853	64.0	407,441	145,379	82	1	54	39.4
1936	1,027	246,787	251,984	3,407	6,432	63.5	386,416	140,010	79	..	62	44.0
Lehigh Valley 1937	1,303	388,761	420,923	52,079	14,127	67.6	862,395	371,830	140	9	126	45.8
1936	1,318	405,306	434,008	49,744	12,203	66.9	746,846	316,948	143	1	147	50.5
New York Central....1937	10,790	2,971,537	3,125,092	182,817	99,330	61.7	6,361,506	2,676,995	914	97	489	32.6
1936	10,789	2,803,564	2,961,133	185,714	87,751	60.7	5,693,597	2,386,992	957	27	533	35.1
New York, Chi. & St. L....1937	1,672	563,349	570,958	8,312	18,834	65.7	1,127,865	442,983	158	15	23	11.7
1936	1,674	485,352	499,643	8,108	15,210	64.4	919,129	355,930	155	12	24	12.6
Pere Marquette 1937	2,081	361,555	372,602	5,285	9,035	61.9	576,282	223,120	118	7	30	19.4
1936	2,081	392,019	409,385	5,803	9,303	59.9	606,113	220,115	110	1	41	27.0
Pitts. & Lake Erie....1937	234	98,610	101,425	86	3,882	60.5	323,096	180,085	29	7	26	41.9
1936	234	74,568	76,777	7	2,604	57.9	217,566	117,293	29	14	25	36.8
Wabash 1937	2,434	651,203	664,806	13,615	19,468	66.9	1,128,979	412,873	143	33	131	42.7
1936	2,435	573,609	587,016	12,414	16,450	64.9	968,235	344,406	134	26	153	48.9
Central Eastern Region:												
Baltimore & Ohio....1937	6,351	1,546,780	1,905,971	209,242	45,354	63.1	3,208,105	1,497,023	695	71	527	40.8
1936	6,367	1,423,155	1,760,873	185,122	39,340	62.7	2,696,480	1,237,087	660	26	612	47.1
Central of New Jersey....1937	681	160,692	180,895	35,696	5,292	61.1	363,545	174,660	59	14	74	50.3
1936	681	152,213	172,840	32,167	4,824	60.5	341,558	169,259	63	3	89	57.4
Chicago & Eastern Ill....1937	931	194,141	194,988	3,128	5,148	66.1	332,109	149,649	59	..	41	41.0
1936	931	186,348	186,761	3,492	4,330	63.9	292,923	130,530	59	..	52	46.8
Elgin, Joliet & Eastern....1937	435	122,260	125,643	2,362	2,981	61.8	234,519	120,285	61	..	23	27.4
1936	434	101,241	104,623	1,821	2,333	61.8	180,718	91,238	53	..	34	39.1
Long Island 1937	393	30,047	30,476	16,820	253	50.8	19,770	7,812	33	5	12	24.0
1936	393	30,247	30,917	15,938	242	50.4	19,637	7,967	36	4	13	24.5
Pennsylvania System 1937	10,027	3,314,259	3,791,206	443,195	114,722	63.6	7,664,896	3,444,745	1,554	199	590	25.2
1936	10,034	2,941,610	3,361,639	378,599	92,700	61.9	6,332,492	2,840,999	1,351	96	990	40.6
Reading 1937	1,448	476,395	518,217	60,258	13,634	61.8	1,009,597	501,862	224	38	88	25.1
1936	1,449	446,404	486,811	57,691	11,367	60.7	838,522	408,928	202	52	91	26.4
Pocahontas Region:												
Chesapeake & Ohio....1937	3,050	770,947	821,865	38,699	32,870	56.8	2,784,435	1,517,248	326	133	97	17.4
1936	3,050	864,244	912,857	39,954	35,020	55.9	2,979,533	1,621,921	400	49	88	16.4
Norfolk & Western....1937	2,183	682,068	733,018	43,799	26,767	59.5	2,236,903	1,198,922	243	86	31	8.6
1936	2,145	671,887	712,946	37,365	25,193	59.5	2,088,176	1,117,956	273	52	54	14.2
Southern Region:												
Atlantic Coast Line....1937	5,076	734,037	735,586	10,009	16,774	63.0	901,976	305,369	256	15	96	26.2
1936	5,101	573,583	574,892	7,676	11,975	62.0	658,038	220,321	247	23	139	34.0
Central of Georgia....1937	1,886	271,449	273,555	4,026	5,891	72.3	321,237	125,178	98	..	23	19.0
1936	1,886	239,815	241,149	3,818	4,934	71.4	271,020	103,267	89	..	34	27.6
Illinois Central (incl. Y. 1937	6,556	1,626,480	1,647,366	31,504	38,225	65.4	2,456,293	1,062,711	691	9	176	20.1
& M. V.)....1936	6,570	1,574,104	1,586,615	31,055	35,647	63.4	2,352,706	1,012,262	594	12	230	27.5
Louisville & Nashville....1937	4,942	1,059,070	1,149,706	26,510	23,296	62.2	1,625,128	792,787	357	8	202	35.6
1936	5,007	1,151,497	1,251,690	39,186	24,692	60.1	1,767,573	864,265	359	4	219	37.6
Seaboard Air Line....1937	4,295	585,951	609,103	4,130	15,518	65.4	918,450	336,178	250	1	61	19.6
1936	4,295	585,951	609,103	4,310	15,518	65.4	665,884	235,202	229	1	101	30.5
Southern 1937	6,596	1,371,811	1,393,744	22,578	31,503	68.8	1,779,175	738,444	506	19	265	33.5
1936	6,596	1,220,971	1,239,587	21,327	26,132	66.4	1,481,431	588,639	447	49	312	38.6
Northwestern Region:												
Chi. & North Western....1937	8,330	1,039,878	1,093,595	36,326	25,799	62.6	1,641,855	619,176	370	62	269	38.4
1936	8,355	955,594	1,008,501	32,397	23,044	64.5	1,418,943	518,535	430	75	267	34.6
Chicago Great Western....1937	1,450	299,254	301,783	9,112	8,139	66.3	490,008	191,587	65	1	23	25.8
1936	1,458	240,719	242,096	8,647	6,681	63.6	404,345	149,665	60	1	28	31.5
Chi., Milw., St. P. & Pac..1937	11,106	1,433,945	1,562,602	78,077	35,937	63.1	2,298,462	953,578	452	111	114	16.8
1936	11,115	1,332,361	1,432,489	73,612	32,506	61.5	2,099,597	863,453	498	61	139	19.9
Chi., St. P., Minneap. & Om.1937	1,636	250,642	269,071	15,700	5,150	62.9	331,150	137,346	99	27	17	11.9
1936	1,641	238,212	251,117	13,263	4,712	62.3	304,571	129,075	100	12	23	17.0
Great Northern 1937	7,997	868,349	875,042	37,572	23,461	63.4	1,505,537	633,167	368	40	159	28.0
1936	8,081	699,657	692,829	23,956	19,112	64.8	1,204,376	505,342	337	88	173	28.9
Minneap., St. P. & S. St. M.1937	4,278	404,563	416,194	6,006	8,296	67.9	478,363	196,253	126	..	26	17.1
1936	4,273	364,164	371,774	4,393	7,222	68.7	420,197	176,511	125	..	30	19.4
Northern Pacific 1937	6,429	775,232	854,390	47,746	21,844	69.9	1,305,880	573,455	384	8	71	15.3
1936	6,429	636,931	687,958	46,069	17,649	68.4	1,051,223	457,231	337	24	94	20.7
Central Western Region:												
Alton 1937	912	223,201	228,184	2,551	5,058	65.5	319,302	104,315	78	2	20	20.0
1936	928	199,947	204,138	1,984	3,996	62.1	255,892	95,887	70	2	28	28.0
Atch., Top. & S. Fe (incl. 1937	13,250	1,936,537	2,122,770	105,572	53,778	66.2	3,245,670	1,175,513	586	66	310	32.2
G.C. & S.F. & P. & S.F.).1936	13,235	1,644,867	1,744,455	65,863	42,010	63.3	2,572,046	872,971	516	97	365	37.3
Chi., Burl. & Quincy....1937	8,934	1,462,449	1,528,151	56,670	36,622	63.8	2,229,955	974,141	460	1	88	16.0
1936	8,969	1,328,235	1,388,016	49,513	31,887	62.7	1,940,743	826,674	447	4	87	16.2
Chi., Rock I. & Pac. (incl. 1937	8,129	1,245,490	1,262,447	7,819	27,220	63.3	1,651,632	622,309	398	14	252	38.0
Chi., Rock I. & Gulf)....1936	8,176	1,095,817	1,122,865	7,462	23,045	63.8	1,390,926	521,882	380	5	323	45.6
Denver & R. G. Wn....1937	2,576	353,344	402,165	54,142	7,614	64.9	484,838	206,806	180	5	13	6.6
1936	2,584	261,770	290,032	33,725	6,190	63.8	390,821	160,933	153	9	47	22.5
Southern Pac.—Pac. Lines.1937	8,614	1,664,434	1,858,388	250,452	56,189	69.3	3,329,836	1,274,383	484	145	137	17.9
1936	8,596	1,186,228	1,285,295	133,893	37,437	63.3	2,307,649	778,754	432	107	259	32.5
Union Pacific 1937	9,918	2,150,357	2,247,057	134,516	59,509	66.2	3,594,062	1,381,692	653	40	166	19.3
1936	9,825	1,655,695	1,724,697	103,312	48,238	64.7	2,900,058	1,051,382	594	84	204	23.1
Southwestern Region:												
Mo.-Kans.-Texas Lines 1937	3,282	410,450	416,612	6,754	10,527	62.6	638,767	229,517	97	27	81	39.5
1936	3,282	378,620	383,248	6,315	9,587	62.1	578,634	201,598	104	17	81	40.1
Missouri Pacific 1937	7,143	1,424,754	1,482,521	34,301	39,545	64.4	2,499,165	1,023,837	393	59	96	17.5
1936	7,201	1,251,506	1,306,451	29,454	32,282	61.7	2,115,695	795,668	357	70	128	23.1
St. Louis-San Francisco....1937	4,888	809,626	823,246	11,199	17,471	67.6	1,047,318	440,958	282	59	69	16.8
1936	4,888	663,393	668,543	8,289	13,951	64.5	841,527	334,126	280	104	64	14.3
St. Louis Southw. Lines...1937	1,733	336,210	337,337	4,453	8,605	66.8	494,550	179,006	110	7	4	3.3
1936	1,767	267,235	272,921	3,590	7,063	65.3	401,261	134,662	102	8	11	9.1
Texas & New Orleans....1937	4,415	727,719	729,489	18,449	18,371	69.8	1,112,274	447,174	209	35	48	16.4
1936	4,415	549,254	549,674	8,613	12,637	64.2	772,950	266,688	202	36	60	20.1
Texas & Pacific....1937	1,944	338,200	338,200	1,582	9,433	63.0	579,918	197,996	68	54	91	42.7
1936	1,945	270,875	270,875	1,641	7,787	59.2	491,227	158,772	63	69	90	40.5

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

1937, Compared with January, 1936, for Roads with Annual Operating Revenues Above $25,000,000

Region, road, and year	Number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany 1937	2,480	4,225	6,705	24.0	21,118	1,216	433	19.1	317	24.4	5,690	165	62.4
1936	2,243	4,531	6,774	22.4	18,943	1,122	405	18.9	271	20.5	5,029	179	62.9
Boston & Maine 1937	7,898	7,847	15,745	14.2	27,527	1,991	765	21.2	448	30.1	3,623	106	46.9
1936	8,264	7,805	16,069	15.3	23,668	1,799	682	21.0	394	26.9	3,130	124	42.1
N. Y., New H. & Hartf. 1937	9,602	12,024	21,626	15.5	27,775	1,940	738	20.6	383	27.4	4,149	108	61.5
1936	13,295	12,357	25,652	17.0	24,260	1,724	653	21.0	286	20.7	3,598	122	55.4
Great Lakes Region:													
Delaware & Hudson 1937	8,197	3,660	11,857	5.0	31,525	2,257	1,109	30.6	714	34.8	9,920	112	45.9
1936	8,375	3,119	11,494	4.2	27,741	2,076	996	30.5	569	29.1	8,281	125	44.2
Del., Lack. & Western 1937	13,036	6,126	19,162	18.1	33,135	1,965	791	23.5	507	31.5	10,000	139	72.9
1936	13,850	6,017	19,867	18.2	28,731	1,846	746	24.2	443	27.9	8,875	159	70.3
Erie (incl. Chi. & Erie) 1937	17,741	16,288	34,029	4.0	42,540	2,590	1,037	22.9	660	41.7	10,398	104	60.7
1936	19,927	11,585	31,512	5.7	37,585	2,365	943	23.2	616	39.4	8,752	118	56.8
Grand Trunk Western 1937	5,122	6,798	11,920	17.1	29,908	1,574	562	21.2	356	26.2	4,566	109	68.5
1936	4,717	7,868	12,585	14.4	28,430	1,576	571	21.8	363	23.3	4,397	112	64.5
Lehigh Valley 1937	11,647	11,222	22,869	7.0	39,129	2,258	973	26.3	526	29.5	9,202	130	58.2
1936	11,810	9,686	21,496	7.6	33,109	1,892	803	26.0	494	28.4	7,757	144	56.5
New York Central 1937	88,483	70,410	158,893	13.7	35,651	2,168	912	27.0	546	32.8	8,003	113	80.4
1936	107,674	65,088	172,762	17.6	32,833	2,052	860	27.2	427	25.9	7,137	122	74.0
New York, Chi. & St. L. 1937	5,706	8,034	13,740	3.1	36,586	1,008	789	23.5	1,029	66.5	8,547	100	102.4
1936	6,956	8,178	15,134	3.8	32,871	1,897	734	23.4	772	51.2	6,858	110	92.5
Pere Marquette 1937	7,651	6,064	13,715	3.2	26,198	1,595	618	24.7	470	30.7	3,458	105	88.8
1936	9,656	7,545	17,201	4.6	24,915	1,546	561	23.7	418	29.4	3,411	112	94.2
Pitts. & Lake Erie 1937	10,438	12,168	22,606	34.9	43,108	3,277	1,826	46.4	248	8.8	24,844	90	56.6
1936	14,859	10,972	25,831	41.8	40,312	2,918	1,573	45.0	146	5.6	16,181	120	36.7
Wabash 1937	9,746	10,647	20,393	6.1	35,306	1,756	642	21.2	620	43.7	5,472	123	75.0
1936	10,815	10,492	21,307	3.9	32,921	1,710	608	20.9	518	38.1	4,563	135	64.7
Central Eastern Region:													
Baltimore & Ohio 1937	58,684	33,107	91,791	17.4	26,519	2,116	987	33.0	531	25.5	7,604	154	56.5
1936	69,833	21,927	91,760	19.4	24,158	1,926	884	31.4	437	22.2	6,268	170	51.6
Central of New Jersey 1937	10,736	9,186	19,922	32.9	27,745	2,356	1,132	33.0	274	13.6	8,271	140	62.1
1936	11,152	10,772	21,924	29.9	26,952	2,333	1,156	35.1	254	12.0	8,015	156	59.2
Chicago & Eastern Ill. 1937	2,211	4,973	7,184	2.6	28,019	1,737	783	29.1	719	37.4	5,187	134	64.8
1936	2,660	3,908	6,568	8.9	26,509	1,592	709	30.1	619	32.1	4,521	145	58.2
Elgin, Joliet & Eastern 1937	8,246	5,656	13,902	5.0	15,610	1,990	1,021	40.4	275	11.0	8,924	134	71.8
1936	8,420	3,602	12,022	5.3	15,566	1,839	929	39.1	244	10.1	6,780	143	56.9
Long Island 1937	395	2,781	3,176	2.3	5,225	675	267	30.9	78	5.0	642	364	43.8
1936	707	3,355	4,062	2.2	5,103	659	267	32.9	66	4.0	655	368	42.3
Pennsylvania System 1937	187,173	64,680	251,853	17.0	33,797	2,357	1,059	30.0	443	23.2	11,082	129	64.8
1936	203,560	55,658	259,218	16.7	29,997	2,191	983	30.6	349	18.4	9,133	139	55.8
Reading 1937	23,108	13,877	36,985	6.2	26,812	2,125	1,057	36.8	430	18.9	11,180	141	60.1
1936	27,282	10,598	37,880	10.0	23,476	1,884	919	36.0	344	15.7	9,103	160	57.5
Pocahontas Region:													
Chesapeake & Ohio 1937	45,245	11,700	56,945	0.7	49,665	3,670	2,000	46.2	889	33.9	16,047	85	55.1
1936	36,403	9,191	45,594	2.8	47,157	3,493	1,901	46.3	1,114	43.0	17,155	93	63.0
Norfolk & Western 1937	37,185	6,996	44,181	1.5	48,910	3,333	1,786	44.8	935	35.1	17,718	105	75.0
1936	32,068	4,943	37,011	2.5	45,342	3,143	1,683	44.4	950	36.0	16,814	119	70.2
Southern Region:													
Atlantic Coast Line 1937	18,223	10,039	28,262	20.5	21,771	1,233	417	18.2	342	29.8	1,941	111	70.7
1936	22,572	8,537	31,109	20.5	19,847	1,148	384	18.4	226	19.9	1,393	120	49.4
Central of Georgia 1937	3,266	4,559	7,825	1.9	21,813	1,188	463	21.2	520	33.9	2,141	128	81.6
1936	4,676	2,902	7,578	8.3	20,536	1,138	434	20.9	440	29.4	1,767	133	68.7
Illinois Central (incl. Y. 1937	31,209	25,931	57,140	20.3	24,425	1,527	661	27.3	614	33.8	5,229	149	66.0
& M. V.) 1936	39,216	19,907	59,123	34.1	24,571	1,509	649	28.4	551	30.6	4,970	153	65.4
Louisville & Nashville 1937	32,626	10,806	43,432	16.6	22,474	1,538	750	34.0	568	26.8	5,175	145	71.4
1936	36,420	8,884	45,304	25.9	22,959	1,538	752	35.0	601	28.6	5,568	150	77.0
Seaboard Air Line 1937	9,687	8,771	18,458	1.8	26,031	1,591	582	21.7	591	41.7	2,525	118	69.8
1936	10,541	5,894	16,435	3.2	23,153	1,422	502	20.9	457	34.1	1,766	130	52.1
Southern 1937	22,890	21,777	44,667	15.3	21,593	1,309	543	23.4	542	33.6	3,612	152	60.5
1936	26,240	17,395	43,635	18.5	19,538	1,223	486	22.5	437	29.2	2,879	167	52.8
Northwestern Region:													
Chi. & North Western 1937	34,036	21,607	55,643	6.5	24,061	1,612	608	24.0	359	23.9	2,398	149	56.7
1936	38,997	24,201	63,198	8.4	21,175	1,489	544	22.5	274	18.9	2,002	155	47.4
Chicago Great Western 1937	1,827	5,057	6,884	3.2	27,227	1,641	642	23.5	909	58.3	4,261	156	120.3
1936	1,912	4,525	6,437	3.3	27,317	1,682	622	22.4	799	56.0	3,311	156	95.9
Chi., Milw., St. P. & Pac. 1937	41,586	21,449	63,035	2.3	24,910	1,612	669	26.5	491	29.3	2,770	151	84.7
1936	46,654	21,759	68,413	3.3	24,175	1,584	652	26.6	416	25.4	2,506	147	77.8
Chi., St. P., Minneap. & Om. 1937	3,871	6,223	10,094	7.4	16,394	1,336	554	26.7	444	26.5	2,708	144	69.1
1936	3,706	5,794	9,500	9.2	16,129	1,286	545	27.4	446	26.1	2,537	149	66.7
Great Northern 1937	35,460	11,224	46,684	8.6	25,180	1,751	736	27.0	438	25.6	2,554	160	57.0
1936	38,188	9,504	47,692	8.3	25,016	1,733	727	26.4	338	19.7	2,017	148	42.5
Minneap., St. P. & S. St. M. 1937	11,677	5,321	16,998	4.6	18,500	1,192	489	23.7	375	23.4	1,480	133	92.9
1936	12,369	4,475	16,844	4.7	17,649	1,159	487	24.4	336	20.0	1,333	134	79.6
Northern Pacific 1937	26,356	7,143	33,499	8.7	25,454	1,694	744	26.3	553	30.2	2,877	183	68.4
1936	30,231	5,102	35,333	10.8	24,912	1,654	719	25.9	413	23.3	2,294	173	56.5
Central Western Region:													
Alton 1937	2,420	5,676	8,096	26.9	31,533	1,439	470	20.6	403	29.8	3,692	133	78.7
1936	2,511	6,184	8,695	27.1	28,895	1,284	481	24.0	346	23.3	3,332	153	70.9
Atch., Top. & S. Fe (incl. 1937	62,722	15,705	78,427	8.4	31,093	1,680	609	21.9	484	33.4	2,862	140	79.0
G.C. & S.F. & P. & S.F.) 1936	69,671	10,804	80,475	11.1	29,364	1,566	532	20.8	346	26.3	2,128	136	63.6
Chi., Burl. & Quincy 1937	24,651	19,284	43,935	7.4	26,399	1,534	670	26.6	720	42.4	3,517	143	98.1
1936	28,597	15,399	43,996	9.5	25,466	1,470	626	25.9	616	37.9	2,973	146	90.9
Chi., Rock I. & Pac. (incl. 1937	21,423	14,664	36,087	7.1	22,967	1,329	501	22.9	557	38.5	2,469	159	64.7
Chi., Rock I. & Gulf) 1936	26,557	13,367	39,924	11.4	21,939	1,272	477	22.6	420	29.1	2,059	160	54.8
Denver & R. G. Wn. 1937	10,581	5,568	16,149	5.1	20,274	1,381	589	27.2	424	24.0	2,590	208	79.9
1936	12,249	2,916	15,165	7.1	22,278	1,501	618	26.0	337	20.3	2,009	177	56.0
Southern Pac.—Pac. Lines. 1937	31,119	32,464	63,583	5.8	30,743	2,015	771	22.7	654	41.7	4,773	123	91.8
1936	33,952	23,535	57,487	9.1	32,222	1,959	661	20.8	436	33.1	2,922	112	62.7
Union Pacific 1937	36,980	23,260	60,240	10.5	32,828	1,685	648	23.2	751	48.9	4,494	150	92.3
1936	42,291	16,767	59,058	14.2	35,628	1,762	639	21.8	574	40.3	3,452	138	68.9
Southwestern Region:													
Mo.-Kans.-Texas Lines 1937	3,678	5,190	8,868	2.6	28,671	1,559	560	21.8	809	59.3	2,256	103	71.2
1936	5,128	4,655	9,783	3.2	28,215	1,531	534	21.0	641	49.1	1,982	104	66.7
Missouri Pacific 1937	13,491	29,863	43,354	2.4	29,854	1,766	723	25.9	827	49.6	4,623	134	96.7
1936	15,113	20,801	35,914	3.2	29,411	1,698	639	24.6	729	48.0	3,564	141	84.6
St. Louis-San Francisco 1937	15,576	11,231	26,807	6.2	23,803	1,301	548	25.2	553	32.4	2,910	148	71.6
1936	17,989	5,743	23,732	6.0	23,541	1,271	505	23.9	445	28.6	2,205	154	52.4
St. Louis Southw. Lines 1937	2,613	4,656	7,269	3.2	26,169	1,477	535	20.8	841	60.5	3,332	108	94.8
1936	3,238	2,986	6,224	4.4	27,763	1,505	505	19.0	695	55.8	2,458	108	76.5
Texas & New Orleans 1937	6,540	13,371	19,911	6.7	27,905	1,543	620	24.3	735	43.2	3,268	94	86.5
1936	7,729	11,955	19,684	6.9	25,294	1,420	490	21.1	443	32.7	1,948	95	64.2
Texas & Pacific 1937	1,944	5,663	7,607	2.4	29,732	1,717	586	21.0	834	63.0	3,286	93	55.8
1936	2,346	4,275	6,621	3.9	29,455	1,823	589	20.4	718	59.5	2,633	99	43.5

ANNUAL REPORT OF
PULLMAN INCORPORATED
AND ALL SUBSIDIARIES
For Fiscal Year 1936

CONSOLIDATED BALANCE SHEET
DECEMBER 31, 1935 AND 1936

ASSETS

CURRENT ASSETS:	1935	1936
Cash	$ 13,434,847.37	$ 26,857,607.77
U. S. Government Securities (1936—Market value $14,087,819.70)	13,184,463.06	12,774,474.87
Accounts and Notes Receivable	7,497,095.30	9,024,522.31
Equipment Trust and Other Deferred-Payment Car Accounts	11,559,630.88	9,705,699.77
Marketable Securities (1936—Market value $2,392,197.68)	1,926,834.25	2,385,877.68
Inventories at Cost	12,808,057.36	12,463,848.91
	$ 60,410,928.22	$ 73,212,031.31
INVESTMENT IN AFFILIATED COMPANIES AND OTHER SECURITIES AT COST	4,113,316.34	3,990,340.89
SPECIAL DEPOSITS WITH VARIOUS STATES UNDER COMPENSATION ACTS	176,382.13	238,389.61
RESERVE FUND ASSETS: U. S. Government Securities held to fund Pension and Insurance Reserves	8,505,340.37	8,854,200.08
DEFERRED CHARGES APPLYING TO FUTURE OPERATION OF THE PROPERTIES	974,931.33	582,292.78
	$ 74,180,898.39	$ 86,877,254.67
EQUIPMENT AND PROPERTY:		
Balance, beginning of Year	$362,021,620.91	$364,490,222.61
Additions during Year	13,282,284.88	9,727,833.01
	$375,303,905.79	$374,218,055.62
Less: Retirements during Year	10,813,683.18	3,526,377.24
	$364,490,222.61	$370,691,678.38
DEDUCT Depreciation Reserves:		
Balance, beginning of Year	$175,912,694.07	$180,080,566.42
Additions during Year	13,190,893.91	14,342,180.21
	$189,103,587.98	$194,422,746.63
Less: Charges on Account of Retirements during Year	9,023,021.56	2,088,627.28
	$180,080,566.42	$192,334,119.35
Balance, end of Year, less Depreciation Reserves	184,409,656.19	178,357,559.03
	$258,590,554.58	$265,234,813.70

LIABILITIES

CURRENT LIABILITIES:	1935	1936
Current Accounts Payable and Payrolls	$ 7,900,726.24	$ 9,547,781.78
Accrued Taxes, not yet due, including Provision for Federal Income and Undistributed Profits Taxes	3,296,071.55	5,755,477.80
	$ 11,196,797.79	$ 15,303,259.58
RESERVES:		
Pension and Insurance Reserves	$ 8,628,790.14	$ 8,956,163.53
Reserve for Contingencies	3,350,000.00	3,350,000.00
Other Reserves	3,145,182.81	3,193,956.24
	$ 15,123,972.95	$ 15,500,119.77
DEFERRED CREDITS APPLYING TO FUTURE OPERATION OF THE PROPERTIES	$ 1,695,478.13	$ 3,456,467.68

CAPITAL STOCK:	SHARES 1935	SHARES 1936		
Pullman Incorporated				
Authorized	3,875,000	3,875,000		
Unissued	485	485		
Issued—At stated value of $50 per share	3,874,515	3,874,515	$193,725,750.00	$193,725,750.00
Reacquired—(In Treasury) at stated value of $50 per share	54,335	54,359	2,716,750.00	2,717,950.00
Outstanding—At stated value of $50 per share	3,820,180	3,820,156	$191,009,000.00	$191,007,800.00
The Pullman Company (a subsidiary)				
Outstanding—At par value of $100 per share	88.105	88.105	8,810.50	8,810.50
			$191,017,810.50	$191,016,610.50
SURPLUS:				
Excess of value of property acquired by issue of shares of capital stock over the stated value of $50 per share, less subsequent write-downs on said property out of this surplus as authorized by the Board of Directors			$ 88,634,168.35	$ 88,419,518.90
Net profits earned since April 30, 1927 (date of reorganization)			57,940,147.57	64,287,254.27
			$146,574,315.92	$152,706,773.17
DEDUCT: Dividends paid during the period from April 30, 1927 to date			107,017,820.71	112,748,417.00
Balance, at December 31			$ 39,556,495.21	$ 39,958,356.17
			$258,590,554.58	$265,234,813.70

TO THE STOCKHOLDERS
OF PULLMAN INCORPORATED:

There are submitted herewith a Consolidated Balance Sheet of your Company and of its wholly-owned subsidiary companies, as at December 31, 1936, and statements of Consolidated Income and of Surplus account for the fiscal year 1936, with accompanying Auditor's certificate.

Consolidated Income Account shows a net earning of $6,347,106.70 ($1.64 per share) in 1936 after all charges and taxes, including provision of $69,271.97 for Federal Surtax on Undistributed Profits, as contrasted with a net loss of $273,727.91 (7 cents per share) in 1935.

* * *

1936 Operations

The segregated results, prior to provision for Federal taxes, from operations in the three major lines of business activity carried on by your Company and its subsidiaries, were as follows:

In the sleeping car business an earning of $4,193,324.38 contrasted with a loss of $1,646,980.51 in 1935, and is the best earning recorded in this division since 1930.

In the manufacturing business an earning of $2,744,775.32 compared with an earning of $228,717.22 in 1935, and also reflects the highest level of earning in this division since 1930.

The earning of $892,597.53 from security investments, after provision for administrative expense of the parent company, reflects a contraction of $455,504.19 from 1935, principally on account of lessened interest earning from securities that were sold or collected during the year and the cash proceeds absorbed in working capital accounts.

* * *

Sleeping Car Business

Rate reductions, streamlining of trains, air conditioning, equipment modernization, service refinements, and speeding up of train schedules, have rendered railroad passenger service more attractive than ever and are meeting with a heartening public response. With intensification of promotional effort on the part of the Railroads and The Pullman Company through nationwide advertising campaigns now under way, designed to make the public aware of improvements and of sustained high level of performance in rail transportation, expansion of Pullman passenger revenue is confidently expected, and given a continuing revival of general business activity, there is indicated a further approach of Pullman travel toward its pre-depression volume.

In addition to the stimulus to general travel imparted by the basic rate reductions, special impetus was afforded by inauguration during 1936 of the Streamliners, carrying sleeping cars, between Chicago and Pacific Coast points and between Chicago and Denver, which reduced the running time by approximately 14 hours between the former and 12 hours between the latter points. These trains have been operated generally at capacity loading, with result that their performance has been outstanding both from a traffic-creative standpoint and in the attainment of record earnings per car operated. The Pullman Company is planning with the Railroads interested the introduction this year of lightweight Pullman sleeping cars for highspeed operation on several of the important trains in the East, as well as new and more capacious Streamliners for operation between Chicago and the West Coast.

Manufacturing Business

With recovery in Railroad earnings, favorable financing circumstances and vigorous upswing in both freight and passenger business of the Railroads, there appeared during 1936 in the long dormant railroad equipment industry more activity than the industry has experienced since the onset of the depression. Freight car bookings in 1936 were at the highest level for any previous year since 1927, with the single exception of 1929, while passenger car orders were the largest since 1930, but the concentration of equipment purchases in the latter part of the year came too late to find full reflection in 1936 earning. As result of this buying, the commercial carbuilders enter 1937 with the heaviest volume of orders on their books since 1930.

The relatively high level of carloadings prevailing during the

last half of 1936 brought increased evidence of the serious depletion that has occurred during recent years in the reserve freight car supply of the Railroads. With prospect of further tightening this year in the equipment supply situation, the outlook for the builders of railroad equipment continues bright, and there have been estimates by conservative authorities that the year 1937 should produce orders for at least 100,000 freight cars. There have also been reported shortages of passenger cars and there are evidences of renewed interest by the Railroads in replenishing and improving their stock of passenger equipment, to take care of markedly increased volume of passenger traffic and to meet improved services offered in competitive territories.

Your Company's manufacturing subsidiary obtained a good proportion of the substantial volume of equipment orders placed during 1936. The manufacturing plants have been maintained in good physical condition, and adequate organization is available for expansion of operations promptly to meet any increased demand for production of new equipment.

The engineering and research divisions of all subsidiary companies have been active in developing improvements in car design and methods of construction and in furthering the application of new materials in car building. For several years the particular attention of these divisions has been directed toward use of new materials and welding processes in car construction, in the interest of lighter weight and with the hope of eventually securing lower production costs. Employment of any of these new materials in car building is conditioned only by the desirability of the resulting structure, from the standpoint of engineering design and of economy. The particular lightweight structures developed and now produced by your Manufacturing Company, with prompt and dependable deliveries assured by that organization's demonstrated performance in this line of manufacture, are believed to be those best adapted to the physical conditions of operation in highspeed trains and to the economic requirements of the service in which they are to be employed. Widespread acceptability of these structures is strongly evidenced by orders on the books of your Manufacturing Company for several hundred passenger train cars, in types of lightweight fabrication selected by the operators to meet their individual requirements.

Following the appearance of the first successful multi-car streamliner of modern type, designed and built at Pullman in 1934 for the Union Pacific Railroad, thirteen more lightweight trains from Pullman and other carbuilders were placed in service on American roads up to the end of 1935. During 1936, twelve additional streamline trains of various types were placed in service in this country. Of the total number of car units in these twenty-six lightweight trains, Pullman built more than any other single carbuilder, and taking into account the larger number of separate lightweight passenger cars of modern type built or on order for steam railroads, your manufacturing subsidiary has been the major participant in this new line of carbuilding activity.

Equipment and Property, Additions and Retirements

During 1936 there were gross additions to Property and Equipment account, classified and compared with similar expenditures during 1935, as follows:

	1936	1935
Air conditioning apparatus in cars	$6,578,944.49	$11,337,978.54
Routine additions and betterments to cars	156,888.28	44,764.66
New and rebuilt cars	2,557,500.00	1,160,500.00
Improvements at laundries, shops, district offices, etc.	101,358.49	587,573.94
Improvements at manufacturing plants	333,141.75	151,467.74
	$9,727,833.01	$13,282,284.88
Less: Retirements of cars and other property	3,526,377.24	10,813,683.18
Net Addition	$6,201,455.77	$2,468,601.70

* * *

At the close of 1936 there were available to the traveling public 4,152 air conditioned Pullman cars, out of an estimated total of 8,078 air conditioned passenger cars of all ownerships on the Railroads of this country. Negotiations are under way with the using Roads for equipment of additional Pullman cars with air conditioning apparatus for the 1937 summer travel period.

* * *

Taxes

For the fiscal year 1936, taxes paid or accrued by Pullman Incorporated and all subsidiaries, for the support of Federal,

CONSOLIDATED SURPLUS ACCOUNT

YEARS ENDED DECEMBER 31, 1935 AND 1936

	1935		1936	
BALANCE OF SURPLUS, as at December 31		$50,893,430.73		$39,556,495.21
Balance from Income Account for year ended December 31	*$ 273,727.91**		$6,347,106.70	
Adjustment arising from transactions in connection with acquisition of outstanding shares of The Pullman Company.	8,938.39		.....	
Adjustment on account of disposition of Lyndora Hotel property	.....		29,206.85	
		*264,789.52**		6,376,313.55
		$50,628,641.21		$45,932,808.76
Less:				
Adjustment on revalued property units retired	$ 438,894.92		$ 243,856.30	
Adjustment on account of disposition of Sagamore Plant	605,233.12		.....	
Dividends Declared and Paid	10,028,017.96		5,730,596.29	
		$11,072,146.00		$ 5,974,452.59
BALANCE OF SURPLUS, as at December 31		$39,556,495.21		$39,958,356.17

*Figures in *italics* denote deficit.

CONSOLIDATED INCOME ACCOUNT

FOR THE YEARS ENDED DECEMBER 31, 1935 AND 1936

	1935	1936
EARNINGS:		
From sleeping car business of The Pullman Company, after deducting all expenses incident to operations	$ 8,906,047.00*	$16,032,327.40
Less: Charges and allowances for Depreciation	10,553,027.51	11,839,003.02
	*$ 1,646,980.51**	$ 4,193,324.38
From all manufacturing business, Pullman Railroad, and other miscellaneous properties, after deducting expenses incident to operations	$ 2,866,583.62	$ 5,247,952.51
Less: Charges and allowances for Depreciation	2,637,866.40	2,503,177.19
	$ 228,717.22	$ 2,744,775.32
From Security Investments, etc., less Administration Expense of Pullman Incorporated	$ 1,348,101.72	$ 892,597.53
Total Earnings from All Sources	*$ 70,161.57**	$ 7,830,697.23
Less: Provision for Federal Income Tax	203,566.34	1,414,318.56
Provision for Federal Surtax on Undistributed Profits	.....	69,271.97
BALANCE carried to Surplus	*$ 273,727.91**	$ 6,347,106.70

* NOTE—The Railroad Retirement Act of 1934 was declared unconstitutional in 1935. The charges therefor ($378,935.74) made in 1934 as part of expense of operation were reversed and credit of that amount was taken as reduction of expense of operation in 1935, in necessary conformity with the Interstate Commerce Commission accounting rules.

*Figures in *italics* denote deficit.

THE PULLMAN COMPANY

TRAFFIC AND OPERATING STATISTICS

COMPARATIVE STATEMENT FOR YEARS ENDED DECEMBER 31

ITEM	1932	1933	1934	1935	1936
CARS OWNED	9,279	8,478	8,473	8,027	8,004
CARS OPERATED	5,693	4,944	5,029	5,057	5,355
CAR MILES	799,484,608	710,747,267	737,167,857	758,554,032	825,945,721
REVENUE PASSENGERS:					
Berth	10,185,444	9,248,461	10,258,642	10,624,818	12,049,359
Seat	5,564,063	4,468,077	4,846,707	4,853,890	5,148,377
TOTAL	15,749,507	13,716,538	15,105,349	15,478,708	17,197,736
REVENUE PASSENGER MILES	6,757,760,858	6,141,986,577	6,891,002,293	7,146,269,648	8,354,840,293
REVENUE FROM CARS	$ 44,196,043	$ 39,316,239	$ 44,523,817	$ 46,758,260	$ 52,645,993
Average per Car	$ 7,763.50	$ 7,952.31	$ 8,853.77	$ 9,246.43	$ 9,830.82
EXPENSES	$ 45,416,077	$ 39,880,665	$ 44,124,176	$ 48,405,241	$ 49,191,772
Average per Car	$ 7,977.53	$ 8,066.48	$ 8,774.29△	$ 9,572.12△	$ 9,185.80△
NET EARNING FROM CARS	*$ 1,220,034**	*$ 564,426**	$ 399,643•	*$ 1,646,981**	*$ 3,454,221**
TRAFFIC AVERAGES:					
Average Revenue per Passenger	$ 2.81	$ 2.87	$ 2.95	$ 3.02	$ 3.06
Average Net Earning per Passenger	*$ 0.08**	*$ 0.04**	$ 0.03	*$ 0.11**	$ 0.20
Average Net Earning per Car per Day	*$ 0.59**	*$ 0.31**	$ 0.22	*$ 0.89**	$ 1.76
Average Mileage per Car Operated	140,438	143,760	146,589	150,004	154,232
Average Journey per Passenger (Miles)	.29	448	456	462	486
Average Miles per Car per Day	384	394	402	411	421
Average Loading per Car (Passengers)	8.45	8.64	9.35	9.42	10.12

*Figures in *italics* denote loss.
△Includes Pullman proportion of expense of operation of air conditioning equipment.
•After provision for Federal Taxes.

State, and local governments, amounted to a total of $4,843,358.94, which absorbed approximately 43% of the net income before taxes, and was equivalent to $1.25 per share on total authorized share capital. About $1,175,000 of the 1936-over-1935 increase in taxes was accounted for by accruals under the Federal Railroad Retirement and Social Security Acts.

The Federal Revenue Act of 1936 imposed on corporations a new "surtax on undistributed profits," involving penalties ranging from 7 to 27 per cent on earning retained in the business. This will tend to prevent accumulation of necessary reserves, such as enabled business in the recent depression to disburse many billions of dollars in interest, maintenance of organization and of wage scales, and in dividends to Stockholders who in turn helped to support consumption of the products of industry.

* * *

Respectfully submitted on behalf of the Board of Directors,
David A. Crawford,
President.

March 9, 1937.

News (Railway Officers)

(*Continued from page 572*)

gineer. He remained with this company until 1926, except for a period of 18 months when he served with the A.E.F. in France as a lieutenant of engineers,

Victor J. Bedell

Transportation Corps. In 1926 Mr. Bedell entered the service of the New Orleans Public Belt as valuation engineer, being advanced to chief engineer in 1935. Later he was appointed also assistant to general manager. Recently he was given the title of general manager in addition to that of chief engineer.

O. W. Limestall, whose appointment as superintendent of the Arkansas division of the Chicago, Rock Island & Pacific was reported in the *Railway Age* of March 6, was born on January 9, 1902, in Monroe county, Ill. Following a business college and extension university education, Mr.

O. W. Limestall

Limestall entered railway service with the Illinois Terminal in 1918, serving as an operator and towerman until 1920, when he joined the Missouri Pacific, where he held the positions of operator, agent and train dispatcher. In 1922 he returned to the Illinois Terminal and after a year with that company he again took up service with the Missouri Pacific. In 1927 Mr. Limestall left this company to go with the Toledo, Peoria & Western, where he was advanced successively through the positions of train dispatcher, night chief dispatcher, assistant superintendent and superintendent. On July 1, 1936, he left this company to go with the Rock Island as trainmaster in the Peoria (Ill.) territory, being advanced to assistant superintendent of the Missouri-Kansas division at Trenton, Mo., on September 5, 1936. His promotion to superintendent of the Arkansas division, with headquarters at Little Rock, Ark., became effective on March 1.

TRAFFIC

S. C. Roberts has been appointed assistant general industrial agent of the Seaboard Air Line, with headquarters at Norfolk, Va.

W. G. Peoples, traveling freight agent for the Southern Pacific at Birmingham, Ala., has been promoted to general agent, with headquarters at Atlanta, Ga., to succeed **D. Asbury,** deceased.

F. J. Lawler, assistant general freight and passenger agent on the St. Louis-San Francisco at St. Louis, Mo., has been appointed to the newly-created position of traffic manager, with the same headquarters. **Carl H. Gray,** assistant general agent at Detroit, Mich., has been promoted to general agent at Pittsburgh, Pa., to succeed **T. W. Bennett,** who has been appointed special traffic representative with the same headquarters. **L. C. Hoffman,** general agent at St. Louis, has been transferred to Detroit, to succeed **J. E. Henderson,** who has been named special traffic representative with the same headquarters. **J. M. Sachen,** soliciting freight and passenger agent at Kansas City, has been appointed general agent with the same headquarters. These changes are to become effective on April 1.

James C. Cumming, assistant general freight and passenger agent on the Union Pacific at Portland, Ore., whose appointment as general passenger agent with the same headquarters was announced in the March 13 issue of the *Railway Age,* was born on March 4, 1883, at Portland. Receiving his education at Bishop Scott Academy, Portland, from which he graduated in 1898, Mr. Cumming entered the service of the Union Pacific on May 18, 1899, in the passenger accounting department at Portland. After holding various positions in that department he was transferred to the general passenger department as a rate

James C. Cumming

clerk on September 17, 1905, which position he held until December 15, 1911, when he was advanced to general baggage agent. On January 1, 1930, Mr. Cumming was appointed assistant general passenger agent and on September 1, 1932, he was appointed general agent, passenger department, being advanced to assistant general freight and passenger agent on September 1, 1933. His appointment as general passenger agent became effective on March 1. Throughout his connection with the Union Pacific, Mr. Cumming has been located at Portland.

MECHANICAL

J. W. Bailey, general foreman of the Montreal shop of the Canadian National, has been appointed superintendent of the Point St. Charles shops, with headquarters at Montreal, Que., succeeding **Alexander McDonald,** deceased.

Gerald P. Trachta, who has been appointed district superintendent of motive power on the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., was born on October 5, 1883, at Schuyler, Neb. Mr. Trachta first entered railway service on December 19, 1901, as a roundhouse sweeper on the Chicago, Burlington & Quincy at Sheridan, Wyo., later being advanced to machinist helper and machinist. He entered engine service on March 10, 1903, as a locomotive fireman, being advanced to locomotive engineer on October 5, 1905, and to road foreman of engines on the Sheridan division October 1, 1910. Seven years later he was further promoted to master mechanic on

the Casper division, resigning on December 1, 1919, to accept a position as road foreman of engines on the Arizona East-

Gerald P. Trachta

ern (now part of the Southern Pacific), at Phoenix, Ariz. On March 1, 1923, Mr. Trachta returned to the Burlington as enginehouse foreman at Wymore, Neb., being promoted to general foreman at Kansas City, Mo., on August 1, 1923, and to master mechanic at Omaha, Neb., on August 1, 1925. Subsequently he was transferred to Galesburg, Ill., and thence to St. Joseph, Mo., being located at the latter point at the time he resigned to enter the service of the Rock Island as district superintendent motive power at Kansas City, effective March 1.

SPECIAL

T. B. O'Meara, assistant editor of the Rail, the Chesapeake & Ohio-Pere Marquette magazine, has been appointed editor and **Laura E. Armitage** has been appointed co-editor, with headquarters at Huntington, W. Va.

ENGINEERING AND SIGNALING

Charles L. Bates, engineer maintenance of way of the Pacific Great Eastern, has been promoted to the newly-created position of chief engineer of this company, with headquarters as before at Squamish, B. C. Born on June 10, 1880, at Mason City, Iowa, Mr. Bates received his engineering education at Massachusetts Institute of Technology, graduating in 1903. In 1902, prior to his graduation, Mr. Bates served as a draftsman in the bridge department of the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati, Ohio, later holding the position of inspector in the maintenance of way department at Mattoon, Ill. In May, 1904, he entered the service of the Canadian Pacific as a resident engineer in the construction department, later serving as locating engineer, as assistant engineer in charge of construction and as resident engineer on maintenance on the Western lines. From 1915 to 1920 he engaged in private consulting practice on municipal matters in Saskatchewan and from 1920 to 1921, he was assistant engineer in charge of the construction of a pier at Vancouver, B. C., for the

Charles L. Bates

Canadian Pacific. When this project was completed Mr. Bates joined the North Western Dredging Company, Vancouver, serving as engineer and superintendent until 1926. From March to November, 1927, he served as assistant engineer in charge of the design and construction of bridges and betterments for the Pacific Great Eastern, then becoming engineer maintenance of way of this company, which position he held until his recent promotion to chief engineer.

OBITUARY

George H. Minor, vice-president and secretary of the Erie with headquarters at Cleveland, Ohio, died on March 21 at Cleveland, following an illness of several days. Mr. Minor had been identified with the Erie for 34 years, during 17 of which he served as vice-president and secretary. He was born on September 27, 1866, at

George H. Minor

Deposit, N. Y., and was educated at Deposit academy, Hamilton college, Clinton, N. Y. (A.B. 1890, A.M. 1893) and Lake Forest university, Chicago (1895), where he studied law. From 1890 to 1892 Mr. Minor was professor of mathematics at Park College, Parkville, Mo., then going to Northwestern University, Evanston, Ill., as an instructor of mathematics. Being admitted to the Illinois Bar in 1895 and the New York Bar in 1896, he practiced law in Buffalo, N. Y., from the latter date until 1903. In that year he entered railroad service with the Erie, serving in the law department until 1904, when he was appointed land and tax agent at Cleveland, Ohio. In the following year Mr. Minor was advanced to assistant general solicitor at New York, which position he held until 1919, when he was made vice-president and secretary of the Erie and its affiliated lines. He was holding this position at the time of his death.

Annual Report

The Delaware, Lackawanna and Western Railroad Company

New York, March 1st, 1937.

To the Stockholders of
The Delaware, Lackawanna and Western Railroad Company:

I beg to submit herewith a report of the operations of your railroad and other property during 1936, together with detailed schedules of property changes and other matters of interest.

The improvement in business, noticeable during the last quarter of 1935 continued during 1936, resulting in increased traffic for the Company.

Gross revenues in 1936 were $49,728,116, an increase of $5,019,722. Operating expenses were $39,184,541, an increase of $2,216,042; consequently, net revenue from operations was $10,543,575, an increase of $2,803,680.

After deductions on account of taxes, equipment and joint facility rentals, net railway operating income was $6,362,518, an increase of $2,774,910, and with additional income of $1,187,855, total income available for fixed charges amounted to $7,550,373, an increase of $2,939,349.

Freight revenue was $36,989,662, a net increase of $4,048,961 derived from various commodities, included among which was bituminous coal. Revenue from anthracite showed a decline from the previous year.

Passenger revenue was $6,997,709, an increase of $512,847, or

General Balance Sheet, December 31, 1936 and 1935

Assets

	1936	1935	Increase or *Decrease*
INVESTMENTS:			
Investment in Road and Equipment:			
Road	$54,795,535.94	$54,617,777.01	$177,758.93
Equipment	83,955,785.78	85,050,704.51	*1,094,918.73*
Improvements on Leased Railway Property	15,706,304.48	15,792,692.66	*86,388.18*
Miscellaneous Physical Property	2,448,998.88	2,457,933.73	*8,934.85*
Investments in Affiliated Companies:			
Stocks	9,487,386.37	9,487,356.37	30.00
Bonds	3,346,438.00	3,335,638.00	10,800.00
Notes	3,772,964.42	3,772,964.42	.....
Advances	4,482,283.08	4,761,649.99	*279,366.91*
Other Investments:			
Stocks	1,703,617.60	1,638,162.41	65,455.19
Bonds	11,882,475.70	11,882,575.70	*100.00*
Notes	611,135.86	619,272.11	*8,136.25*
Advances	14,306,883.05	13,817,397.70	489,485.35
Miscellaneous	17,400.53	20,701.47	*3,300.94*
Total Investments	$206,517,209.69	$207,254,826.08	.....
CURRENT ASSETS:			
Cash	$3,915,477.71	$2,704,692.64	1,210,785.07
Special Deposits	649,327.38	.....	649,327.38
Loans and Bills Receivable	.....	22,300.00	*22,300.00*
Traffic and Car Service Balances Receivable	950,546.67	712,374.97	238,171.70
Net Balances Receivable from Agents and Conductors	618,325.57	531,244.30	87,081.27
Miscellaneous Accounts Receivable	1,000,304.30	967,659.39	32,644.91
Materials and Supplies	1,694,149.45	1,915,909.51	*221,760.06*
Other Current Assets	9,677.98	10,016.30	*338.32*
Total Current Assets	8,837,809.06	6,864,197.11	.....
DEFERRED ASSETS:			
Working Fund Advances	$26,093.00	$26,636.98	*543.98*
Insurance and Other Funds	178,512.75	178,512.75	.....
Other Deferred Assets	26,002.15	30,829.44	*4,827.29*
Total Deferred Assets	230,607.90	235,979.17	.....
UNADJUSTED DEBITS:			
Rents and Insurance Premiums Paid in Advance	$585,777.07	$575,319.60	10,457.47
Other Unadjusted Debits	398,926.35	371,520.58	27,405.77
Total Unadjusted Debits	984,703.42	946,840.18	.....
Grand Total	$216,570,330.07	$215,301,842.54	$1,268,487.53

Liabilities

	1936	1935	Increase or *Decrease*
CAPITAL STOCK:			
Common Stock	$87,407,500.00	$87,407,500.00	.....
Less held by Company	2,966,300.00	2,966,300.00	.....
	$84,441,200.00	$84,441,200.00	.....
Premium on Capital Stock	70,720.00	70,720.00	.....
Total Stock	$84,511,920.00	$84,511,920.00	.....
LONG TERM DEBT:			
Funded Debt Unmatured.	.....	$70,000.00	.....
Less held by Company	.....	55,000.00	.....
		$15,000.00	*$15,000.00*
Equipment Trust Obligations	$4,457,000.00	4,652,000.00	*195,000.00*
Non-Negotiable Debt to Affiliated Companies:			
Open Accounts	279,458.48	326,883.52	*47,425.04*
Total Long Term Debt	4,736,458.48	4,993,883.52	.....
CURRENT LIABILITIES:			
Loans and Bills Payable	.....	$680,736.25	*680,736.25*
Traffic and Car Service Balances Payable	$784,779.54	531,537.28	253,242.26
Audited Accounts and Wages Payable	2,829,851.07	2,579,980.11	249,870.96
Miscellaneous Accounts Payable	825,338.18	20,397.66	804,940.52
Interest Matured Unpaid	.....	450.00	*450.00*
Dividends Matured Unpaid	34,030.50	45,091.50	*11,061.00*
Unmatured Interest Accrued	42,446.47	29,208.05	13,238.42
Unmatured Rents Accrued	1,785,967.53	1,786,912.51	*944.98*
Other Current Liabilities	176,511.76	170,867.35	5,644.41
Total Current Liabilities	6,478,925.05	5,845,180.71	.....
DEFERRED LIABILITIES:			
Other Deferred Liabilities	12,859,395.28	13,003,011.68	*143,616.40*
UNADJUSTED CREDITS:			
Tax Liability	$3,669,564.10	$3,336,847.37	332,716.73
Insurance and Casualty Reserves	954,718.77	852,545.79	102,172,98
Accrued Depreciation — Equipment	39,940,964.76	38,870,144.14	1,070,820.62
Other Unadjusted Credits	2,052,524.68	2,125,602.10	*73,077.42*
Total Unadjusted Credits	46,617,772.31	45,185,139.40	.....
CORPORATE SURPLUS:			
Additions to Property Through Income and Surplus	$6,446,251.48	$6,480,268.66	*34,017.18*
Appropriated Surplus not Specifically Invested	417,048.20	417,048.20	.....
Profit and Loss — Credit Balance	54,502,559.27	54,865,390.37	*362,831.10*
Total Corporate Surplus	61,365,858.95	61,762,707.23	.....
Grand Total	$216,570,330.07	$215,301,842.54	$1,268,487.53

Figures in italics denote decrease.

A general audit of the accounts of your Company and its subsidiaries as of the close of business December 31st, 1936, was made by Messrs. Haskins & Sells, Certified Public Accountants, and a detailed statement of the results of their investigations was submitted February 18th, 1937, with the following letter:

"Our audit (except for details that do not seem to us necessary) has covered the transactions of the company during the year ended December 31, 1936, and has found them to be correct. In our opinion, the methods employed and the safeguards surrounding all transactions are thorough and businesslike."

7.91%. On June 1st basic passenger fares were reduced, in compliance with an order of the Interstate Commerce Commission, from 3.6 cents to 2 cents a mile in coaches and from 3.6 cents to 3 cents a mile in Pullman cars. It was hoped that these reductions would attract to the railroads a sufficient number of additional passengers to offset the loss of revenue from the higher rates and would produce sufficient additional revenue to compensate your Company and other carriers for the increased costs incident to additional equipment, station service and train service necessary to handle the increased traffic. Although considerable additional revenue was enjoyed following the reductions of fares, it is doubtful from data presently available that the increase was sufficient to meet the added operating costs.

Receipts from one-way and round-trip tickets during the first five months of the year, when higher basic rates and Pullman surcharges prevailed, increased over the previous year by 14.24%; whereas, during the other seven months of lowered passenger fares the increase of revenue was 16.10%. Fair increases were realized in revenue from miscellaneous sources.

United States Mail and Railway Express Agency revenue likewise shows encouraging increases. Milk revenue was $74,951 less than in 1935. This continuing decline, while less pronounced than previously, was brought about largely by a reduction of 10% in milk rates, effective February 27th, in an effort to prevent further diversion of the milk traffic to highway trucks. The aggregate reduction in milk rates, to meet highway competition during the past five years, has been 30%.

Emergency Revenue

The Company enjoyed supplemental revenue from the extension during 1936 of the emergency freight rates which had been authorized in April, 1935, and reflected in the 1936 receipts to the extent of $1,602,802. The Interstate Commerce Commission declined to permit the continuance of the emergency charges beyond the close of the year, but did authorize hearings which are now proceeding, in which the carriers are endeavoring to justify various proposed increases and adjustments of basic rates which, if granted, would restore in part the loss of revenue which has resulted from the expiration of the emergency freight tariffs.

Maintenance

The decrease in maintenance of way expenses was due to the abnormal expenditures on this account in 1935, necessitated by replacement of roadway destroyed by the floods of that year. A second flood in New York and Pennsylvania, in March, presented operating difficulties and entailed additional expense for replacement of roadway and other property. Although the flood covered a greater area than that of the previous year, it was less destructive of property in the regions through which your railroad operates.

Expenditures for track maintenance during the year included the cost in place of 10,378 tons of new 131 lbs. rail, 303,946 treated ties and 151,398 tons of rock ballast.

Expenditures for maintenance of equipment increased over the previous year by $607,876. Virtually all of that added cost was incurred in repairs to, and renewals of, steam locomotives and freight cars due to more intensive use of equipment handling the increased traffic.

Depreciation

The total charge to operating expenses for accrued depreciation of equipment was $2,655,514 compared with average annual charges of $2,676,615 during the pre-depression years 1925 to 1929, inclusive.

Effective December 1st, the Interstate Commerce Commission ordered some slight reductions in depreciation rates, with permission to make the changes retroactive to January 1st.

Had your Management deemed it expedient to make the adjustments authorized, the results of the year's operations would have shown a small surplus.

Operating Performance

A comparison of performance during two years follows:

	1936	1935
Revenue Ton Miles	3,083,998,222	2,625,652,130
Revenue Passenger Miles ..	464,569,825	423,783,439

Increased transportation expense, $1,615,573, was chiefly due to additional fuel and to labor costs necessitated by the greater number of passengers and the larger tonnage transported during the year.

Payments for loss of, and damage to, freight were slightly more than during the previous year, but, considering the greater volume of traffic handled, this account was proportionately less. The ratio of loss and damage to gross freight revenue was .51%, while it was .53% in 1935.

Payments of claims for injuries to employees and others during the year amounted to $393,248, a decrease of $16,312.

Many persons are killed or injured annually while trespassing upon the right-of-way and trains, and although the Company has no legal liability for such casualties, every effort is made, in the interest of public welfare and safety, to prevent such persons from entering upon and using the property for their personal convenience. During the year your Company's police ejected 16,352 persons from the premises and trains of your railroad. The Company's police forces arrested 921 persons for felonies and misdemeanors, and secured 854 convictions, during the year.

Corporate Changes

Bangor and Portland Railroad Bonds

Seventy thousand dollars par value of Bangor and Portland Railroad first mortgage bonds of 1936, payment of which was assumed under the merger agreement of 1909, matured January 1st, 1936. The remaining bonds then outstanding, amounting to $15,000 par value, were purchased and retired.

Railroad Credit Corporation

Of the loans of $1,500,000 from the Railroad Credit Corporation, the balance of $680,736 unpaid January 1st, 1936, was paid during the year. The balance due your Company from the Railroad Credit Corporation at the close of the year was $384,703. Possible losses in the final adjustment of this asset are protected by a reserve of $417,048.20 created in 1932.

Equipment Trust Certificates

In April your Company purchased from Reconstruction Finance Corporation $4,652,000 par value of its Equipment Trust Certificates, which your Company had sold to the Government in 1934. The certificates were resold under competitive bidding at advantageous prices.

The first installment upon the herein mentioned certificates, amounting to $195,000, was paid during the year. Installments likewise were paid upon twelve Diesel locomotives, in amount of $178,000, thus effecting an aggregate reduction in outstanding indebtedness of $1,053,736.

In addition to the foregoing liquidation payments, expenditures for additions and betterments to roadway property and equipment, totaling $1,572,853, were made during the year.

All of the foregoing expenditures, which totaled $2,641,589, were made from current cash.

Your Company has no bank loans outstanding and none of its treasury securities is pledged.

Leased Line Rentals

Pursuing the policy of reducing interest payments upon securities of leased railroads, your Company has purchased and holds in its treasury substantial amounts of stocks and bonds of such companies. There has been acquired during the last ten years $1,963,210 of those securities, which has reduced rental payments $92,071 a year.

Railroad Retirement Act

The Railroad Retirement Act of 1934 having been declared unconstitutional by the United States Supreme Court, your Company did not accrue the possible liability of $690,199 imposed by the similar Act of 1935, effective March 1st, 1936. However, it did accrue full liability under the Social Security Act relating to Unemployment Insurance.

The loyal and efficient service rendered by Officers and Employees is acknowledged and appreciated by the Management.

By order of the Board of Managers.

J. M. DAVIS,
President.

Annual Report

Canadian Pacific Railway Company

FIFTY-SIXTH ANNUAL REPORT

OF THE
DIRECTORS OF CANADIAN PACIFIC RAILWAY COMPANY
YEAR ENDED DECEMBER 31, 1936

To the Shareholders:

The accounts of the Company for the year ended December 31, 1936, show the following results:—

Income Account

Gross Earnings		$138,562,762.76
Working Expenses (including taxes)		115,251,651.83
Net Earnings		$23,311,110.93
Other Income—Net	$10,198,522.23	
Provision for depreciation of Ocean and Coastal Steamships	3,567,151.00	
		6,631,371.23
		$29,942,482.16
Fixed Charges		23,913,298.24
Balance transferred to Profit and Loss Account		$6,029,183.92

Profit and Loss Account

Profit and Loss Balance December 31, 1935		$139,504,688.15
Balance of Income Account for the year ended December 31, 1936		6,029,183.92
		$145,533,872.07
DEDUCT:		
Amount credited investment reserve being equivalent to advances made to Minneapolis, St. Paul & Sault Ste. Marie Railway Company to make up deficiency in amount available to meet interest obligations for year 1936 guaranteed by Canadian Pacific Railway Company	$3,659,645.32	
Loss on lines abandoned and on property retired and not replaced	3,357,399.34	
Miscellaneous—Net Credit	*Cr. 15,875.98*	
		7,001,168.68
Profit and Loss Balance December 31, 1936, as per Balance Sheet		$138,532,703.39

NOTE—Subsequent to the end of the year, a dividend of 1 per cent. on the Preference Stock, amounting to $1,372,569.21, was declared from the earnings of the year 1936, payable April 1, 1937.

The balance of Income Account resulting from the operations of the year 1936 available for transfer to Profit and Loss Account was $3,197,100 greater than in 1935.

Railway Earnings and Expenses

The results of railway operations in 1936, compared with 1935, were as follows:

	1936	1935	Increase
Gross Earnings	$138,562,763	$129,678,905	$8,883,858
Working Expenses (including taxes)	115,251,652	107,281,381	7,970,271
Net Earnings	$ 23,311,111	$ 22,397,524	$ 913,587

In 1936 working expenses, including taxes, amounted to 83.18% of gross earnings, as compared with 82.73% in 1935. Excluding taxes the ratio was 80.13% as against 79.56% in 1935.

Gross earnings showed an improvement each month over the corresponding month of the previous year, the total increase being $8,883,858 or 6.9%. The increase during the first three quarters of the year was 8.6% whereas in the last quarter it was only 2.6%. The less favorable showing in the last quarter was due in large measure to the extraordinarily small grain crop which followed the severe drought in Western Canada. During the year wheat which had been carried in storage was exported freely, and, although the new crop was less than in the previous year, the earnings from grain and grain products were slightly higher.

Passenger earnings increased $509,708 or 3.4%. Effective June 1, the passenger surcharges, included as part of sleeping and parlor car fares, were eliminated, and the basic fare for passengers in coaches was reduced from 3.45c to 3c per mile. All through fares between points competitive with United States railroads were also adjusted to meet the reductions ordered in Eastern United States by the Interstate Commerce Commission.

Freight earnings increased $7,669,508, or 7.8%, gains being recorded in practically all the principal commodities.

Working expenses increased $7,970,271 or 7.4%. More than one-half of the increase was in maintenance expenses, which were $4,432,378, or 10.4%, higher than in 1935. Almost the entire increase in maintenance of way expenses resulted from the inclusion of the whole of the Company's proportion of maintenance expenditures incurred by reason of the agreement with Dominion Government to provide work for approximately 5,000 unemployed men transferred from the relief camps which were being closed by the Government. The Government paid the wages of these men and certain incidental transportation and other expenses aggregating approximately $1,323,000. The Company absorbed the cost of materials applied, of work train service, and of all supervisory and overhead expenses, the maintenance proportion of which amounted to approximately $1,605,000. Snow removal expenses were somewhat heavier than in 1935. The greater part of the increased maintenance of equipment expenses was in passenger car repairs, which increased $1,760,000. During the year 129 passenger cars were air-conditioned, involving heavy expenditures, partly chargeable to capital and partly to maintenance. Charges for retirement of rolling stock and depreciation of inland steamers were approximately $1,024,000 greater than in 1935.

Transportation expenses increased $2,394,237 or 5.0%. The ratio of transportation expenses to gross earnings was reduced from 36.6% in 1935 to 36.0% in 1936. The following averages indicate the continued improvement in freight train operations:

	1931	1933	1935	1936
Gross tons per freight train mile	1,389	1,515	1,546	1,557
Gross tons per freight train hour	21,766	23,849	25,051	25,370
Pounds of fuel consumed per 1,000 gross ton miles freight..	116	112	109	108

The scale of deductions from basic rates of pay of officers and employees made effective in 1935 was continued throughout 1936. During the year conferences were held between representatives of the Canadian railways and of their employees to discuss the request of the latter for the complete restoration of basic rates of pay. It was not considered that conditions warranted the granting of this request. This led to the application by the employees for the appointment of a Board of Conciliation under the terms of the Industrial Disputes Investigation Act. A Board was appointed and hearings took place in November and December. At the close of the year the Board had not made its report.*

Other Income

There was a substantial improvement in Other Income, the increase over 1935 amounting to $2,053,027.

Dividends increased $1,251,467. Cash dividends received from The Consolidated Mining and Smelting Company of Canada, Limited, included under this caption, amounted to $3,365,000, an increase of $1,177,750 over 1935.

Net income from interest, exchange, separately operated properties and miscellaneous increased $493,993.

Net earnings from ocean and coastal steamships before depreciation increased $317,266. There was a substantial increase in the gross and net earnings of the coastal services, reflecting the improvement in general conditions. Net earnings of ocean services were approximately the same as during the previous year. Net earnings of cruise services decreased substantially, due primarily to the change in the itinerary of the world cruise of the Empress of Britain made necessary by the disturbed conditions in the Mediterranean. Gross earnings of Atlantic services increased substantially but were offset by the cost of handling the additional traffic, increase in price of materials consumed, increased cost of repair work owing to higher wage rates, and an increase in seamen's wages in accordance with agreement with the National Maritime Board. Gross earnings of Pacific services increased slightly, and the expenses were considerably less than in 1935 owing principally to more favourable exchange rates. The increase in net earnings from these services was approximately equal to the reduction in net earnings from cruise services. During the year 1936 the Company's steamships made 136 regular voyages on the Atlantic, 25 on the Pacific and 35 cruises. Your fleet suffered no casualties during the year, and, apart from the disposal of one of the older coastal vessels and a transfer barge, no change was made in the fleet.

Net earnings from hotel, communication and miscellaneous properties decreased $9,699. Your hotels enjoyed substantially increased patronage. The net earnings for the year amounted to $672,796. While your hotels have been maintained in first class condition and the equipment modernized from time to time, the cost of renewals and replacements being charged to expenses, no provision has hitherto been made for obsolescence. After careful study of the situation, it has been decided to make an annual appropriation for this purpose. Accordingly, an amount of $620,094 was transferred from the net earnings of hotels to hotel depreciation reserve. It is proposed to increase the amount so appropriated from time to time as conditions warrant. In certain prior years, net earnings of hotels aggregating $2,319,339 were credited to hotel investment account. The amount so credited has been transferred to hotel depreciation reserve.

Steamship Depreciation

The full annual depreciation requirement for your ocean and coastal fleets, amounting to $3,567,151, was appropriated from Income Account.

Fixed Charges

Fixed charges were $246,639 less than in the previous year. This saving was due principally to the retirement of the remainder of the Five Year Notes held by the Canadian Chartered Banks out of the proceeds of new bond issues sold in Canada at lower rates of interest.

Profit and Loss Account

An amount of $3,659,645, credited to investment reserve, was charged to profit and loss account, being equivalent to advances made to the Minneapolis, St. Paul & Sault Ste. Marie Railway Company to make up the deficiency in the amount available to meet its interest obligations for 1936 guaranteed by your Company.

During the year abandonment of lines was completed as follows:

Edmundston Subdivision	27.2 miles
Orford Mountain Subdivision	16.0 "
Nickel Subdivision	16.6 "
Shore Line Subdivision	23.3 "
Kingston Subdivision—Godfrey Spur	4.1 "
Nipigon Subdivision—second track	5.5 "
Total	92.7 "

The approval of the Board of Railway Commissioners to these

* Under date of January 30, 1937, the Board of Conciliation recommended:

"That the existing deduction from basic rates of pay of 10 per cent. be reduced to 9 per cent. on February 1, 1937, as proposed in conciliation conferences by the railways, and that further fixed reductions during the year be put into effect unconditionally, namely, a reduction to 8 per cent. not later than August 1, 1937, and a reduction to 7 per cent. not later than November 1, 1937."

While the railways have expressed their willingness to accept the recommendation of the Board as the basis for an agreement, and have changed the percentage deduction from 10 per cent. to 9 per cent. effective February 1, 1937, the employees have indicated that they are not prepared to adopt the recommendations. The matter is still unsettled.

abandonments was obtained where necessary. After allowing for salvage, the net charge to Profit and Loss on account of these abandonments was $2,029,550.

The necessary adjustments in the property investment account have also been made for all other railway, steamship and miscellaneous property retired during the year. While the final disposition of the Place Viger Hotel, the operation of which ceased towards the close of 1935, has not yet been determined, it has been written down to its estimated present value.

Dividends

Upon consideration of the results of the Company's operations in 1936, and having in view its obligations as guarantor of the interest on certain securities of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, your Directors declared a dividend from the earnings of 1936 of 1 per cent. on the Preference Stock, payable April 1, 1937.

The year's earnings and the rate of dividend on the Preference Stock were affected by the severe drought in the territory served by your Company and the Soo Line, which resulted in substantial curtailment of the earnings for the last quarter of the year.

Land Accounts

Sales of agricultural lands during the year amounted to 92,210 acres for $955,520, an average of $10.36 per acre, including 1,635 acres of irrigated land at $52.88 per acre and the remainder at an average of $9.59 per acre.

Throughout 1936 the Company continued the policy of debt relief to its land contract holders, the adoption of which in February, 1932, constituted the first effective step to relieve in a measure the distress of the farmers in Western Canada, which resulted from poor crops and low prices. The rebates of interest from 1932 to the end of 1936 have amounted to $7,260,496, to which might be added adjustment of principal outstanding and further concessions in interest for cash payments, amounting to $2,267,827, a grand total of $9,528,323.

The wisdom of this policy has been demonstrated by the subsequent enactment of Dominion and Provincial legislation for the relief of farmers. A very considerable number of farmers have taken advantage of the provisions of the Farmers' Creditors Arrangement Act of the Dominion, which provides the machinery for the composition of their indebtedness. Moreover, in Saskatchewan, and particularly in the drought areas, substantial relief is being extended to the farmers under an arrangement between the Dominion and Provincial Governments and the various mortgage and loan companies interested for the remission of arrears of taxes, interest, etc. In Alberta legislation was enacted for a compulsory reduction in all debts incurred prior to July, 1932, and for the abolition of interest. The validity of this legislation is being tested in the Courts.

Collections on land contracts have naturally been affected adversely by the persistent drought of the past six years, coupled with the effects of the general depression. Rehabilitation of the drought areas is now receiving the attention of Governments and experts, and the opinion is held that less than 10% of the soil in these sections has been permanently damaged.

It is proposed to continue for the present year the policy of concessions to land purchasers, with certain modifications.

Pensions

The Company has since 1903 maintained a system of voluntary pensions without contribution from the employees. The changes in conditions that have taken place, more particularly in recent years, have made it clear that the continuance of the voluntary system would eventually impose upon the Company financial burdens which it would be unable to bear. After thorough investigation by a committee composed of officers of the Company and representatives of the employees, it was decided that from the standpoint of both the Company and the employees the simplest and most satisfactory plan would be to adhere as closely as possible to the underlying principles of the original system, and to incorporate therein suitable provisions for contributions by the officers and employees, and such other changes as were necessary to meet the altered conditions.

New rules and regulations drafted by the committee, embodying the foregoing principles, were approved by your Directors to take effect January 1, 1937. Participation is optional for employees in the service prior to January 1, 1937, but compulsory for those entering the service thereafter. For all participants the rate of contribution has been fixed initially at three per cent. of their earnings. Contributions on the part of the Company remain voluntary. Provision has been made for the continuance of allowances to those already on pension so that there will be no change in their status.

The plan will be administered by a committee, composed of four officers of the Company and three General Chairmen of the organized classes of employees. Contributions are to be paid into a trust fund with the Company as trustee.

The actuary retained in connection with the preparation of the new pension system estimates that, while during the early years of the operation of the system the relief to the Company will not be material, it will gradually increase until ultimately the contributions of the employees will provide approximately 45% of the total pension cost.

Although eligible employees have until December 31, 1937, to elect to become contributors, 31,600, or approximately 70%, so elected prior to the end of the year 1936.

Pension disbursements for the year totalled $2,233,008 and were included in working expenses. During the year 389 employees were pensioned. The total number of pensioners at the end of the year showed an increase of 183 over the number at December 31, 1935. The distribution by ages of the pensioners on the roll at December 31, 1936, was as follows:—

Under 60 years of age	110
From 60 to 64 years of age inclusive	255
From 65 to 70 years of age inclusive	1,274
Over 70 years of age	1,306
	2,945

Capital Expenditures

In anticipation of your confirmation, your Directors authorized capital appropriations, in addition to those approved at the last annual meeting, aggregating for the year 1936 $2,421,405. Your approval will be requested for capital appropriations during the present year of $27,306,061. Particulars of the principal items are:—

Replacement and enlargement of structures in permanent form	$ 285,466
Additions and betterments to stations, freight sheds, coaling and watering facilities and engine houses	356,165
Ties, tie plates, rail anchors and miscellaneous roadway betterments	1,927,707
Replacement of rail in main and branch line tracks with heavier section	522,113
Rock ballasting	482,344
Additions and betterments to shop machinery	256,685
Installation of automatic signals	64,511
Additional terminal and side track accommodation	47,186
New rolling stock	20,723,422
Additions and betterments to rolling stock	1,636,231
Additions and betterments to hotels	42,041
Additions and betterments to communication facilities	876,863

New rolling stock includes appropriations covering the cost of 3,600 freight cars, 30 passenger cars, and 50 locomotives. In view of the extensive retirements and limited purchases of rolling stock during the last few years, it has been deemed advisable to take advantage of the present level of prices to acquire additional units of modern design necessary for the efficient handling of the increased volume of traffic which has already developed and the further increase which is anticipated. Additions and betterments to rolling stock includes ordinary betterment of freight cars and motive power to secure more efficient operation and the capital proportion of the cost of air-conditioning 141 passenger cars to extend the use of this type of equipment to meet the public demand.

Temiscamingue and Abitibi Railway

For some time past your Company has been urged by representatives of the rapidly developing agricultural and mining areas of Northern Quebec to undertake the construction of a line of railway which would provide improved means of communication from these areas to the industrial centres of the Province. To meet these demands, as well as to place the Company in a position as occasion might warrant to provide railway communication with the mining area in which your subsidiary, The Consolidated Mining & Smelting Company of Canada, Limited, has a substantial interest, your Company caused application to be made to the Provincial Legislature for a charter authorizing the Temiscamingue and Abitibi Railway Company to construct such a line. While the act of incorporation passed the Legislative Assembly, unfortunately that body unexpectedly dissolved before the act received the approval of the Legislative Council. The Canadian National Railways opposed the granting of this charter and obtained from the Dominion Parliament authority to construct a branch line serving part of the territory into which the Temiscamingue and Abitibi Railway had been projected. Conferences with the Canadian National Railways and the Dominion Government failed to produce a basis of compromise, such as the joint construction of the section of line which would be duplicated under the plans of the two companies. The Canadian National Railways have proceeded with the construction of their branch

CANADIAN PACIFIC RAILWAY COMPANY
GENERAL BALANCE SHEET, DECEMBER 31, 1936

Assets

Property Investment:		
Railway, Rolling Stock, Inland Steamships, Hotel, Communication and Miscellaneous Properties	$774,271,263.86	
Improvements on Leased Railway Property	96,098,217.26	
Ocean and Coastal Steamships	104,614,834.58	
Stocks, Bonds and Other Securities of Leased, Controlled and Jointly Controlled Railway Companies and Wholly Owned Companies—Cost	198,279,296.26	
		$1,173,263,611.96
Other Investments:		
Miscellaneous Investments—Cost	$26,981,389.12	
Advances to Controlled and Other Companies—Net	23,023,626.50	
Mortgages Collectible and Loans & Advances to Settlers	2,894,093.21	
Insurance Fund Investments	8,248,294.47	
Deferred Payments on Lands and Townsites	38,688,677.83	
Unsold Lands and Other Properties	32,067,441.92	
		131,903,523.05
Current Assets:		
Material and Supplies	$16,941,308.54	
Agents' and Conductors' Balances	5,721,427.15	
Net Traffic Balances	1,034,366.66	
Miscellaneous Accounts Receivable	5,287,214.42	
Cash	23,608,315.40	
		52,592,632.17
Unadjusted Debits:		
Insurance Prepaid	$157,592.99	
Unamortized Discount on Bonds	3,271,477.51	
Other Unadjusted Debits	1,507,746.69	
		4,936,817.19
		$1,362,696,584.37

Liabilities

Capital Stock:		
Ordinary Stock	$335,000,000.00	
Preference Stock—4% Non-cumulative	137,256,921.12	
		$472,256,921.12
Perpetual 4% Consolidated Debenture Stock	$480,261,548.74	
Less: Pledged as collateral to bonds	188,850,000.00	
		291,411,548.74
Bonds and Equipment Obligations	$195,520,500.00	
Less: Securities deposited with Trustee of 5% Equipment Trust	9,290,145.33	
		186,230,354.67
Twenty Year 4½% Sinking Fund Secured Note Certificates (1944)	$30,000,000.00	
Less: Purchased by Trustee and cancelled	9,785,100.00	
		20,214,900.00
Current Liabilities:		
Audited Vouchers	$5,382,846.60	
Pay Rolls	2,697,066.83	
Miscellaneous Accounts Payable	2,256,124.90	
Accrued Fixed Charges	1,801,981.10	
		12,138,019.43
Deferred Liabilities:		
Dominion Government Unemployment Relief	$4,271,922.71	
Miscellaneous	253,290.60	
		4,525,213.31
Reserves and Unadjusted Credits:		
Rolling Stock Reserve	$8,166,555.08	
Hotel Depreciation Reserve	2,939,433.96	
Steamship Depreciation Reserve	39,973,240.19	
Insurance Reserve	8,248,294.47	
Contingent Reserves	7,863,904.38	
Investment Reserve	19,659,645.32	
Unadjusted Credits	5,211,360.63	
		92,062,434.03
Premium Received on Capital and Debenture Stock (Less discount on bonds and notes written off at date of issue)		66,760,351.09
Land Surplus		78,564,138.59
Profit and Loss Balance		138,532,703.39
		$1,362,696,584.37

E. A. LESLIE, *Comptroller.*

Auditors' Certificate:

We have examined the Books and Records of the Canadian Pacific Railway Company for the year ending December 31, 1936, and having compared the above Balance Sheet therewith, we certify that in our opinion it is properly drawn up so as to show the true financial position of the Company at that date, and that the Income and Profit & Loss Accounts correctly set forth the result of the year's operations.

PRICE, WATERHOUSE & CO.,
Chartered Accountants.

Montreal, March 5, 1937.

line. Your Directors have still under consideration the question of the further action which should be taken by your Company.

Finance

There were issued and sold during the year $15,000,000 Collateral Trust Bonds dated February 15, 1936, secured by pledge of $18,750,000 Perpetual 4% Consolidated Debenture Stock. This issue consisted of $5,000,000 Serial 3% Bonds maturing in amounts of $1,000,000 on February 15 in each of the years 1937 to 1941 inclusive, and $10,000,000 Convertible Fifteen Year 3½% Bonds maturing February 15, 1951. The holders of the convertible bonds were given the right at any time between February 15, 1937, and February 15, 1944, inclusive, to convert their bonds into shares of the Ordinary Capital Stock of the Company in the ratio of four shares of the par value of $25.00 each to each $100.00 principal amount of the bonds. The proceeds of this issue were used to retire $12,000,000 of the Five Year Notes maturing June 22, 1938, and the balance for extensions to and improvements of the Company's property. Debenture Stock to the amount of $20,000,300 pledged as security for the notes was released and cancelled.

There were also issued and sold during the year $38,000,000 Collateral Trust Bonds dated April 1, 1936, secured by pledge of $45,600,000 Perpetual 4% Consolidated Debenture Stock. This issue consisted of $8,000,000 Three-Year 2½% Bonds maturing April 1, 1939, callable on any interest date on 30 days' notice at 100 and accrued interest; $15,000,000 Five-Year 2½% Bonds maturing April 1, 1941, callable on any interest date on 30 days' notice at 100½ and accrued interest; and $15,000,000 Convertible Nine and One-Half Year 3% Bonds maturing October 1, 1945, callable on any interest date on 30 days' notice at 102 and accrued interest. The holders of the convertible bonds were given the right at any time between April 1, 1937, and April 1, 1944, inclusive, to convert their bonds into shares of the Ordinary Capital Stock of the Company in the ratio of four shares of the par value of $25.00 each to each $100.00 principal amount of the bonds. The proceeds of this issue were applied toward the retirement of $11,000,000 Five Year 4½% Notes maturing June 22, 1938, and $25,000,000 Five Year 4½% Notes maturing December 1, 1938. Debenture Stock to the amount of $60,000,000 pledged as security for the notes was released and cancelled.

As a result of this financing the Company was enabled to complete the retirement of the $60,000,000 of notes issued to the Canadian Chartered Banks in 1933. The Dominion Government was entirely relieved of its obligation as guarantor of these notes without any expense to it.

On January 2, 1936, the Company borrowed $2,000,000 on its short term promissory notes from United States banks, secured by pledge of $2,850,000 Perpetual 4% Consolidated Debenture Stock. These loans were repaid at maturity during the year, and the Debenture Stock was released and cancelled.

Owing to unavoidable delay in delivery of part of the rolling stock to be sold to the Company by the Dominion Government under the Hire-Purchase Agreement referred to in the last Annual Report, the formal agreement could not be executed before the end of the year. Your Company's obligation to the Government as at December 31, 1936, was $5,640,500 of the total authorized amount of $5,730,000.

At the request of the Dominion Government and as a means of assisting in the relief of unemployment the Company agreed, as previously mentioned, to increase its programme of maintenance of way and betterment work during the season of 1936 so as to provide employment for a maximum of five thousand men then receiving assistance from the Government. The Government reimbursed the Company for the wages paid, amounting to approximately $1,323,000, and advanced to it by way of loan $554,700, repayable in five equal annual instalments commencing in 1938 with interest at the rate of 2½% per annum, on account of the other expenditures for labor incurred in preparation for and in connection with the work.

During the year equipment obligations to the amount of $1,950,000 were redeemed by the Company. An amount of $2,300,150 was also deposited with the Trustee of the Equipment Trust maturing in 1944 who purchased and cancelled $634,000 of equipment certificates. Twenty Year 4½% Sinking Fund Secured Note Certificates to the amount of $301,800 were purchased by the Trustee and cancelled.

Your guarantee of interest was endorsed on Four per cent. First Mortgage Bonds of the New Brunswick Southern Railway Company to the amount of $500,000 maturing August 1, 1986, issued by that Company and delivered to your Company in repayment of advances made to the New Brunswick Southern Railway Company to enable that Company to retire its outstanding bonds of the same amount which matured January 1, 1933.

London Hotel Site

In view of the necessary delay in the development of the hotel site in Berkeley Square, London, for the purpose for which it was purchased, your Directors decided to take advantage of proposals made by an outstanding firm for the immediate construction upon it of a modern building worthy of its importance. Negotiations contemplate a lease for a period of 200 years on terms satisfactory to your Company, with a limited option to purchase the freehold at a price in excess of the cost of the property to the Company.

Minneapolis, St. Paul & Sault Ste. Marie Railway Company (Soo Line)

The results of operation of the Soo Line for the past year were disappointing. A moderate increase in general traffic was practically neutralized by an almost complete failure of the grain crop in the territory served, due as in Canada to severe drought. The slight increase in total revenues was more than offset by the increase in expenses occasioned by the imposition of social security taxes and the restoration of basic wage rates. Your Company advanced to the Soo Line during the year $3,659,645 to make up the deficiency in the amount which the latter had available to meet interest obligations guaranteed by your Company and $576,062 to redeem the balance of notes issued to the Railroad Credit Corporation in 1932 and guaranteed as to principal and interest by your Company.

Spokane International Railway Company

There was a substantial increase in the traffic handled by this Company in 1936 as compared with the previous year, owing to improvement in general conditions and to the Canada-United States Trade Agreement 1935. As a result the Company ended the year with net earnings from railway operations of $103,870, as compared with a loss of $18,887 in 1935. The reorganization of this Company and its subsidiary, the Coeur d'Alene and Pend d'Oreille Railway Company, was proceeded with, and on September 12 the Trustee filed a plan with the Federal Court and the Interstate Commerce Commission. Hearings on the plan commenced before the Interstate Commerce Commission in December but were not concluded at the close of the year. In view of the improved position of the Company it is hoped that a feasible plan of reorganization may now be concluded. There was no change in the investment of your Company in the Spokane Company during the year.

The Duluth, South Shore and Atlantic Railway Company

Notwithstanding a substantial improvement in the net earnings in 1936, in view of the approaching maturity on January 1, 1937, of certain mortgage bonds aggregating $5,400,000, for payment of which no funds were available, the Board of Directors of The Duluth, South Shore and Atlantic Railway Company at a meeting on December 30, 1936, authorized the filing of a petition in the Federal Court pursuant to Section 77 of the Bankruptcy Act of the United States, stating that the company was insolvent and that it desired to effect a plan of reorganization. Your Directors are of the opinion that these proceedings will result in an improved capital structure and place the South Shore Company in a position to pay a return on your Company's investment therein. Your Company received during the year some small payments on account of unpaid interest due from the South Shore Company.

Leases and Agreements

There will be submitted for your consideration and approval a lease of the railway of Atlantic and North-West Railway Company extending from the point of connection between the railway of that Company and the railway of Ontario and Quebec Railway Company on the south bank of the St. Lawrence River, near Montreal, to Farnham, and from Brookport (formerly Brigham Junction) to a point of junction with the Maine Central Railway at or near Mattawamkeag in the State of Maine, for a term of 999 years from the first day of January, 1937, at a clear annual rental of £52,000, being equal to the annual interest on £1,300,000 Four per cent. First Mortgage Redeemable Debenture Stock issued by Atlantic and North-West Railway Company and secured by a mortgage of the said line of railway dated December 2, 1936; with a proviso that after redemption of the said Debenture Stock the annual rental payable under the lease shall be equivalent to the annual interest on the bonds, debentures, debenture stock or other securities of Atlantic and North-West Railway Company from time to time outstanding. The lease will supersede your Company's present lease of the said line of railway made the 6th day of December, 1886, reserving a rental of £28,013-14-0 per annum for twenty years from the commencement of the said lease and thereafter £66,500 per annum in perpetuity. Your Company also became a party to the mortgage under which it agreed to guarantee the payment of the principal of and the interest on the Debenture Stock to be issued thereunder.

Your confirmation and approval will be asked of an agreement, dated October 1, 1935, between your Company and The Midland Railway Company of Manitoba, whereby the Midland Company is granted the right to use that portion of the line of your Company in the City of Winnipeg from a point west of Academy Road to a point east of Portage Avenue, on the basis of paying a fixed annual rental equivalent to one-half of the interest at the rate of 3% per annum on the agreed capital account, one-half of interest at the rate of 5% per annum on additions to capital account and a wheelage proportion, with a minimum of 15%, of the maintenance and operation expenses.

Co-operation with Canadian National Railways

During the year two co-operative measures previously agreed upon were put into effect under the provisions of the Canadian National-Canadian Pacific Act of 1933.

1. Abandonment of the Canadian National Railway line between Iberville and Farnham and joint operation of the Canadian Pacific line.

2. Abandonment of the Canadian Pacific line between Cyr and Edmundston and joint operation of the Canadian National line.

The total annual economy from arrangements in effect at the end of the year is approximately $1,135,000 and the Joint Executive Committee has approved and authorized the completion of formal agreements covering other projects estimated to yield savings of approximately $527,000, a total annual saving of approximately $1,662,000, one-half of which will accrue to each Company.

Meetings of the Joint Executive Committee were held during the early part of the year. Subsequently, under the legislation passed at the last session of Parliament, the Canadian National Trustees were replaced by a Board of Directors. Shortly after the Board assumed its duties in October, your Directors submitted to it proposals for co-operative action in a number of competitive matters, but, no doubt owing to pressure of other matters following their appointment, the Directors of the Canadian National Railways had not communicated their views to this Company at the close of the year.

Stock Holdings

The holdings of the Capital Stocks of the Company in December, 1936, were distributed as follows:—

	Ordinary		Preference		Percentage of Ordinary and Preference Stocks combined
	No. of holders	Percentage of Stock	No. of holders	Percentage of Stock	
Canada	26,942	16.12	99	.31	11.44
United Kingdom and other British	20,483	52.40	27,220	97.11	65.64
United States ...	16,955	24.75	30	.58	17.59
Other Countries ..	4,285	6.73	307	2.00	5.33
	68,665		27,656		

Changes in Directorate

During the year the Directors received, with regret, the resignation of Mr. W. A. Black, who had been a member of the Board since 1927, and a member of the Executive Committee since 1933. Mr. John W. McConnell was appointed a Director of the Company succeeding Mr. Black and Mr. Ross H. McMaster was appointed to the Executive Committee.

Retiring Directors

The undermentioned Directors will retire from office at the approaching Annual Meeting. They are eligible for re-election:

Sir Edward Beatty, G.B.E.,
Mr. John W. McConnell,
Rt. Hon. Lord Shaughnessy, K.C.,
Hon. J. Marcelin Wilson, Senator.

In conclusion your Directors again acknowledge with sincere appreciation the continued loyalty and efficiency of the officers and employees.

For the Directors,
E. W. BEATTY,
President.

Montreal, March 8, 1937.

GET TOGETHER DEPARTMENT

PROFESSIONAL DIRECTORY

GET TOGETHER DEPARTMENT

ONLY ONE ADVANTAGE

. . . but a big one

The single advantage of the Bethlehem Twin Frog Plate is this: with only three sizes of these plates in stock any frog can be fitted up, regardless of the weight of rail, or the angle or type of the frog. The economy of the great reduction in inventory is self-evident.

These plates are used in pairs, with each plate holding down one side of the frog. The base area is large; the forged hook which clamps the frog flange to the plate is stronger and has greater holding power than the track spike which would otherwise be used. Four spikes anchor each plate. The three standard lengths are 23, 27 and 31 inches.

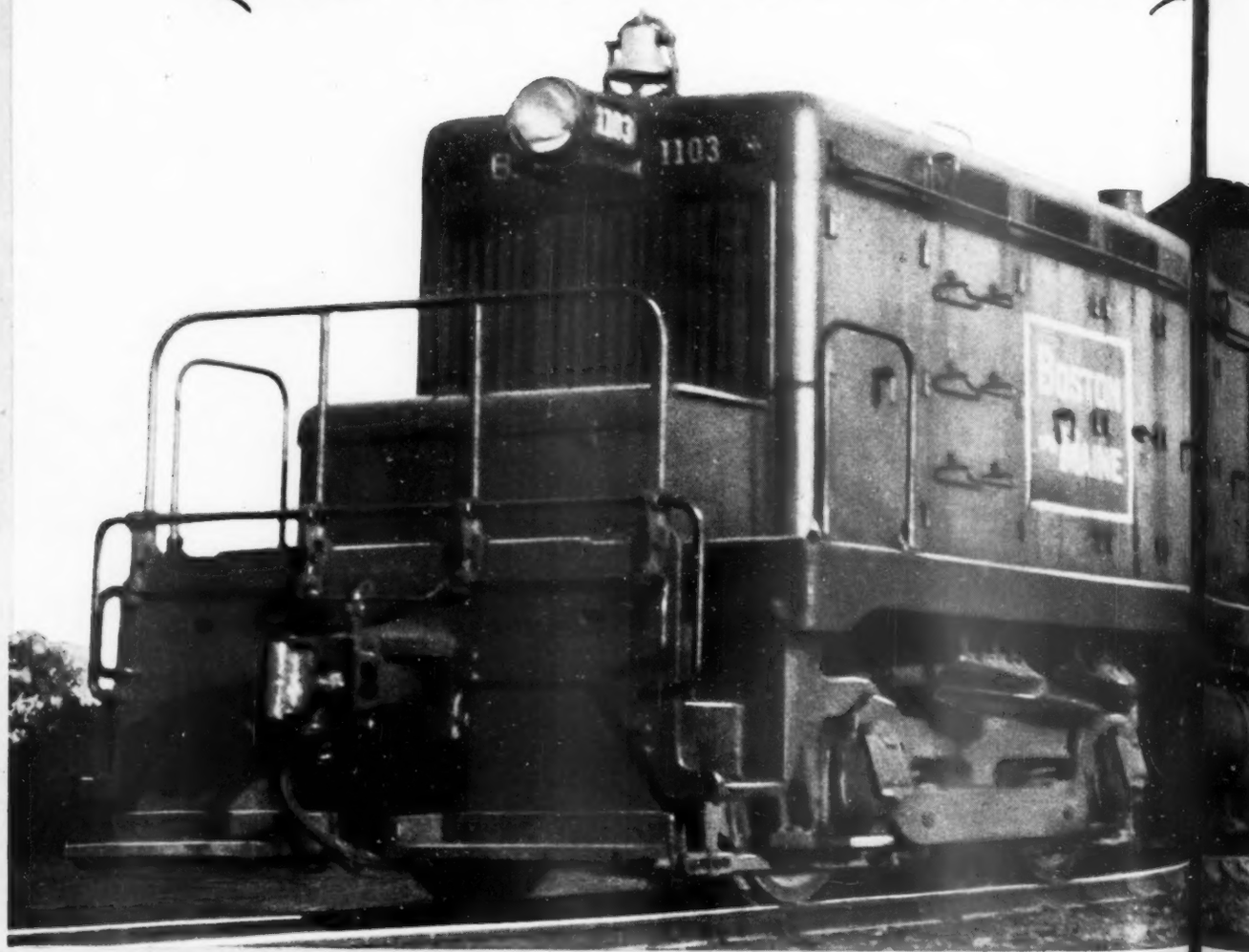
BETHLEHEM STEEL COMPANY

EMC DIESEL SWITCHERS

FASTER

HIGH TRACTIVE EFFORT AT LOW SPEEDS

EXACT POWER CONTROL AT ALL SPEEDS



ELECTRO-MOTIVE

SUBSIDIARY OF GENERAL MOTORS

Rand SMOOTHER *Switching*

THERE is no motive power as suitable for all classes of yard switching as Diesels.

EMC Diesel Switchers have high starting tractive effort and exceptional characteristics for quick acceleration, starting heavy trains and negotiating steep grades. The entire locomotive weight is on drivers and is available in starting.

EMC Diesel Switchers effect faster and smoother switching, making possible a reduction in switching hours and with minimum damage to cars and lading.

EMC Diesel Switchers are available in 100-ton, 600 H.P. and 125-ton, 900 H.P.

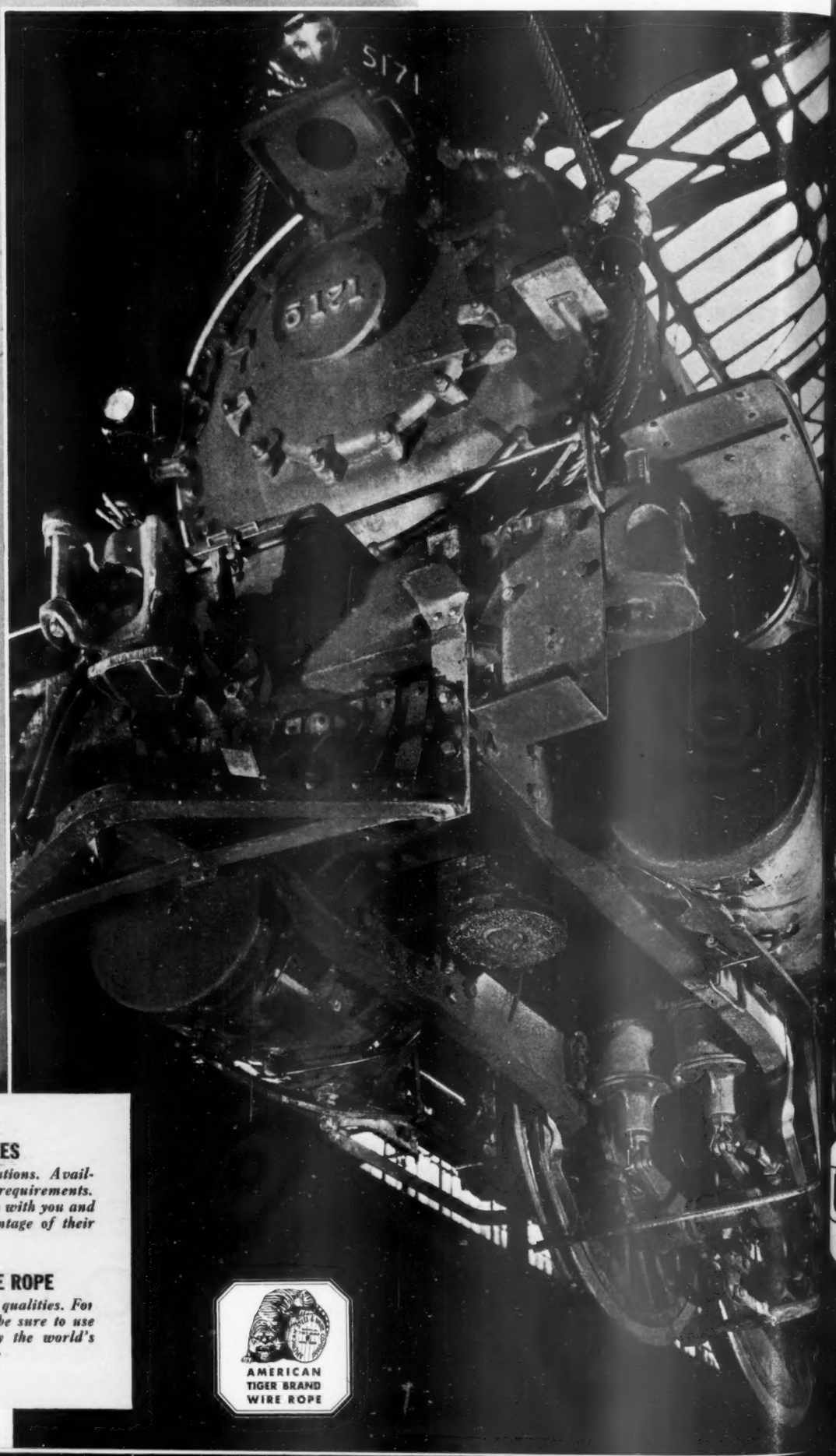
Starting T. E.
(30% Adhesion)
100-Ton, 600 H. P.—60,000 lb.
125-Ton, 900 H. P.—75,000 lb.

High Fuel Economy—Low Maintenance
High Availability—Investigate

CORPORATION
LA GRANGE, ILLINOIS, U. S. A.

EMC

Dependable



ELECTRICAL WIRES AND CABLES

Made to the most exacting specifications. Available in all sizes and finishes for all requirements. Our engineers will gladly cooperate with you and you are invited to take full advantage of their "wire knowledge."

AMERICAN TIGER BRAND WIRE ROPE

Known for its toughness and lasting qualities. For safety and long economical service be sure to use this high quality product made by the world's largest manufacturer of wire rope.

AMERICAN
TIGER BRAND
WIRE ROPE

WIRE PRODUCTS FOR THE RAILROADS

THE American Steel & Wire Company has been supplying railroads with the highest quality wire products for many years. These products have established exceptional records for economy. The reasons are—perfection of design, the use of finest materials and unexcelled manufacturing facilities.

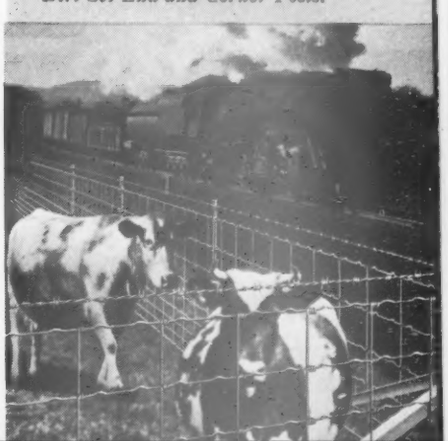
Our engineers are familiar with the needs of the railway field and the importance of an efficient, uninterrupted operating schedule. American Steel & Wire Company wire products have always been skillfully and carefully made. They are required to stand severe tests in the laboratory to prove that they will stand up against the actual test of hard service. An American Steel & Wire Company trademark is a promise of efficient service—a promise based on the reputation our products have been making for themselves for over one hundred years.

TIGERWELD RAIL BONDS

Tigerweld Signal and Power Bonds are made by the most advanced method of manufacture. The conductors are flash buttwelded to solid steel terminals. These bonds are available in any construction or type desired for any method of application.

U. S. S. AMERICAN RAILROAD FENCE

Safe right-of-way is FENCED right-of-way. Reduce claims for injuries and loss of life by using American Railroad Fence, Banner Steel Posts, and National Expanding Anchor Dirt Set End and Corner Posts.



Amerite Signal Wire · Americore Rubber-Covered Wires · Aerial Cables · Bare Copper Wire · Magnet Wire · Metallic and Non-Metallic Trench Cables · Perfected Telephone and Telegraph Wire and Strand · Pole Steps · Premier Welding Wire · Reliance URC Weatherproof Wires and Cables · Tigerweld Rail Bonds · American Tiger Brand Wire Rope · American Railroad Fence · Banner Steel Posts · and National Expanding Anchor Dirt Set End and Corner Posts.

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago Empire State Building, New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Products Company, New York, *Export Distributors*

USS

UNITED STATES STEEL

Exide
IRONCLAD
BATTERIES
With Exide **MIPOR** Separators
"MIPOR," Reg. U. S. Pat. Off.

CHARACTERISTICS

What battery characteristics are needed for car-lighting and air-conditioning service?

EDUCATIONAL advertising during recent years, plus the widespread use of simple instruments indicating light intensity, have completely revolutionized the popular conception of what constitutes adequate illumination. The resulting higher intensity illumination installed in homes and places of public gathering lead the traveling public to expect the same improvement in railway car-lighting.

The flat voltage characteristic of the Exide-Ironclad Battery provides illumination of uniform intensity which maintains the high standard expected by the public today. While available for all types of air-conditioning equipment, this superior voltage characteristic is especially valuable in cases in which large currents for the compressor motor must be supplied entirely from the battery when the train is standing or running at low speeds.

As voltage drops, the intensity of illumination falls at an alarming rate. Considering 32 volts as 100%, the intensity (lumens) obtained at 25 volts is about 33% lower than at 28 volts. It is recommended by the Association of Railway Electrical Engineers that the voltage at the battery terminals should not drop below a minimum value of 28 for a 32-volt battery in this service.

Investigate and determine accurately just how long the battery you are considering will furnish the maximum load it may have to carry in an emergency without the voltage dropping below this value. Exide-Ironclads have the ability to maintain a satisfactory voltage without regard to how severe or how light the service may be.

In this service, the current available for charging a battery varies widely. If this varying current is to be efficiently employed, the battery must be capable of absorbing high charge rates usefully, and must also be able to utilize small currents without waste.

The characteristics of the Exide-Ironclad Battery are such that with a properly adjusted regulator the battery is capable of utilizing without harm any and all currents that will be delivered to it. As a result, Exide-Ironclads in this service, with equipment now generally employed, have no practical limitations as to their ability to accept and utilize any current furnished them while the car is in motion.

●

Check Exide-Ironclads on the following seven points, and you will see why these batteries can improve your car-lighting and air-conditioning service and cut costs — Reliability · **CHARACTERISTICS** · Weight · Space · Efficiency · First Cost · Ease of Maintenance.

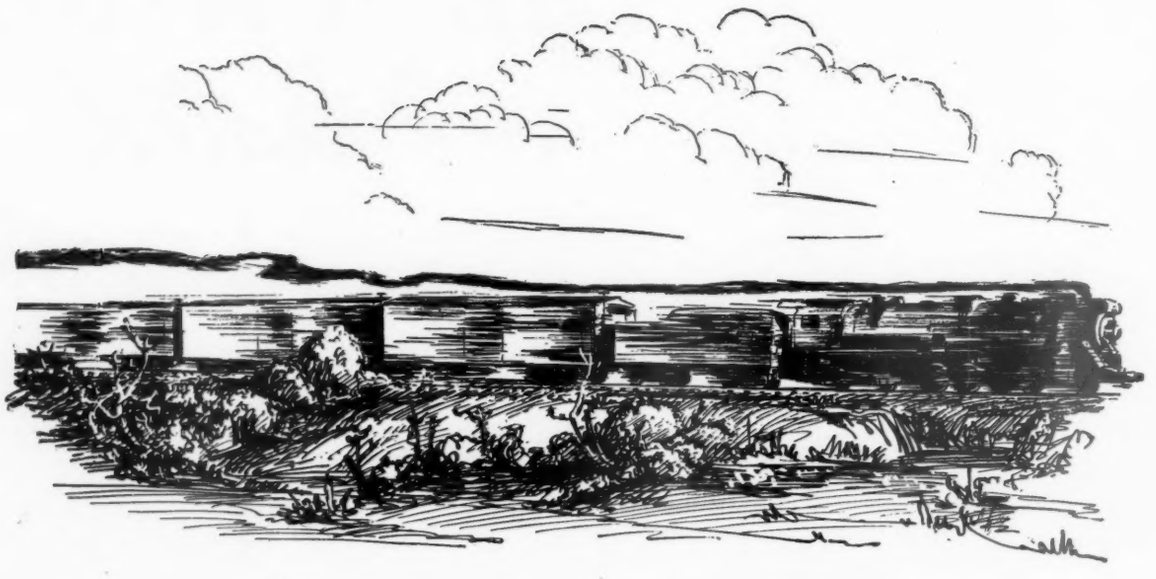
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

When a pair of Armco Wrought Steel Wheels are mated after final inspection they are really twins. The inspector is measuring them to within a half-tape size. Only the most experienced Armco workmen are assigned the task of accurately taping Armco Wrought Steel Wheels. Because of this, many roads accept our pairing without check by their own inspectors. This care in taping and mating means a wheel pair that wears evenly—assuring higher mileage and longer life. The next time you buy wheels, order "Armco". There is a right type for the right job: one-wear, two-wear, multiple or heat-treated. Armco Railroad Sales Company, Executive Offices: Middletown, Ohio.

Subsidiary of The American Rolling Mill Company

ARMCO

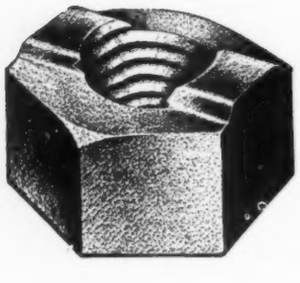
ARMCO WROUGHT STEEL WHEELS



Speed—*With Safety*

MODERN railroads are meeting the ever-increasing demand upon them for speed and more speed—but, in every instance, they place *safety* first; speed second.

Greater speed places greater strain on bolted parts; there is a greater tendency for nuts to loosen.



Grip Nuts counteract this tendency; they insure the essential safety factor. Their uniform, full-depth threads afford ample holding power; their automatic lock, put into them when they're made, locks them positively and permanently on their bolts.

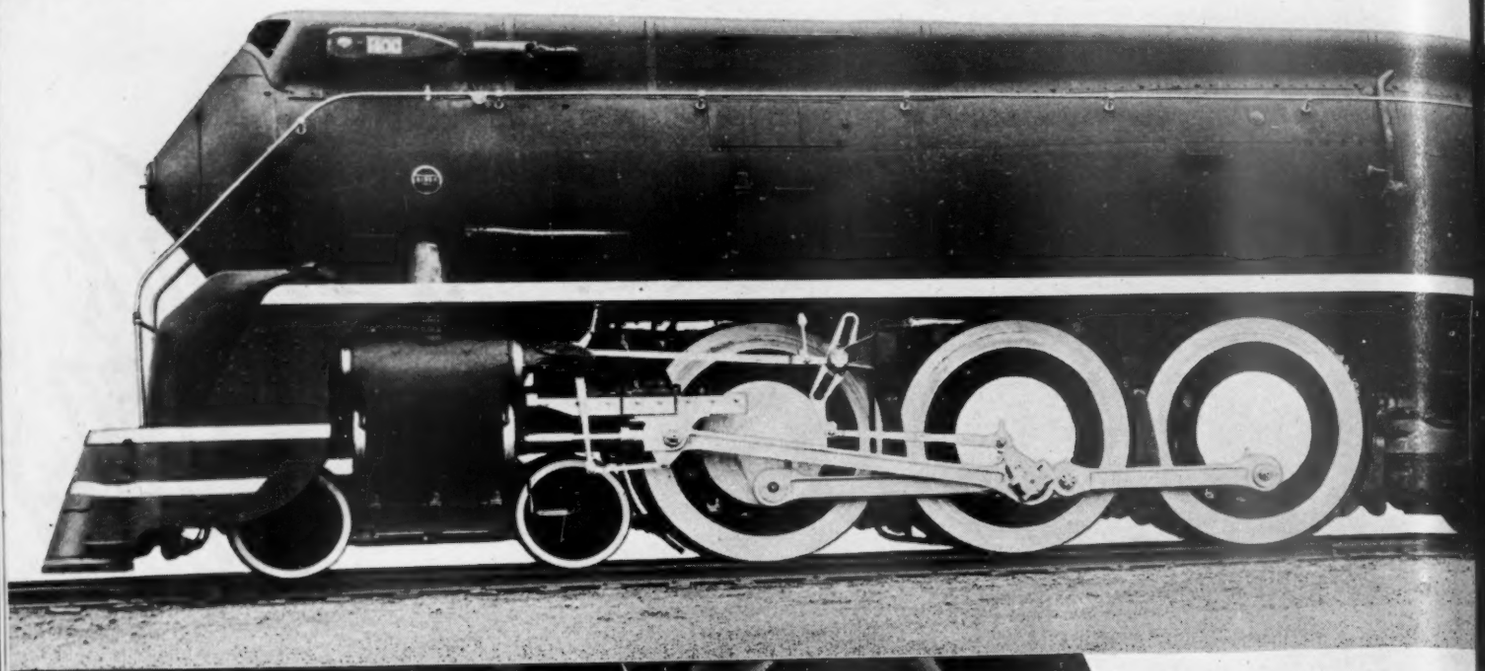
For perfect safety, no matter how great the speed, apply Grip Nuts.

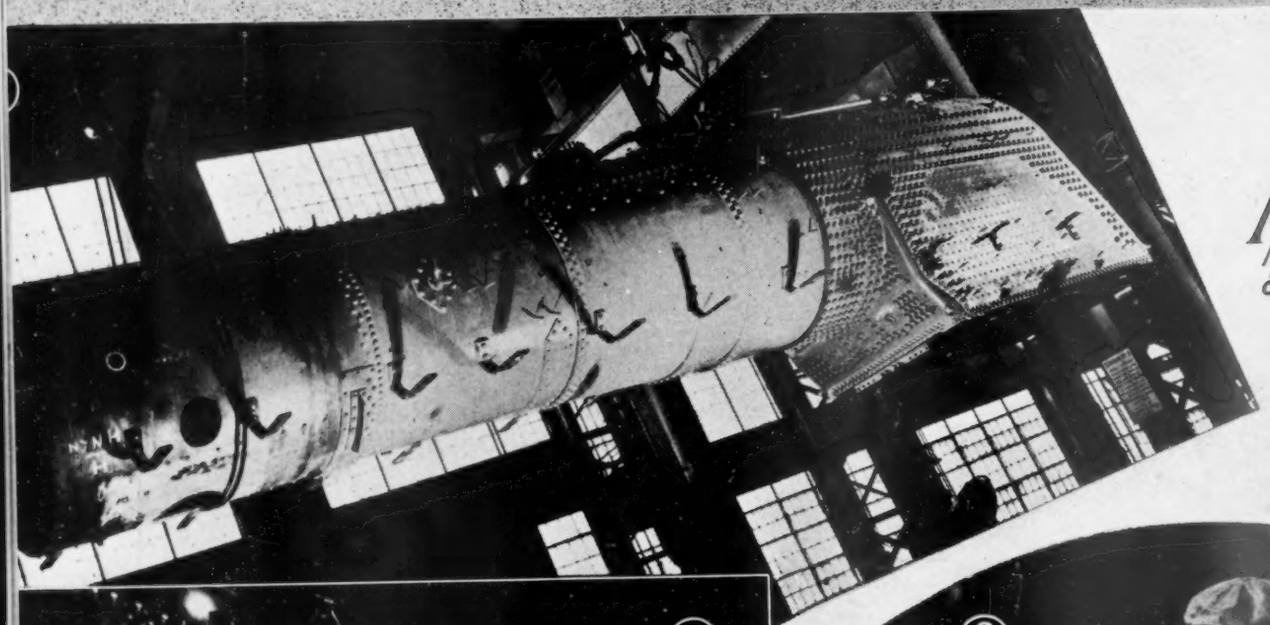
GRIP NUT COMPANY

5917 South Western Avenue

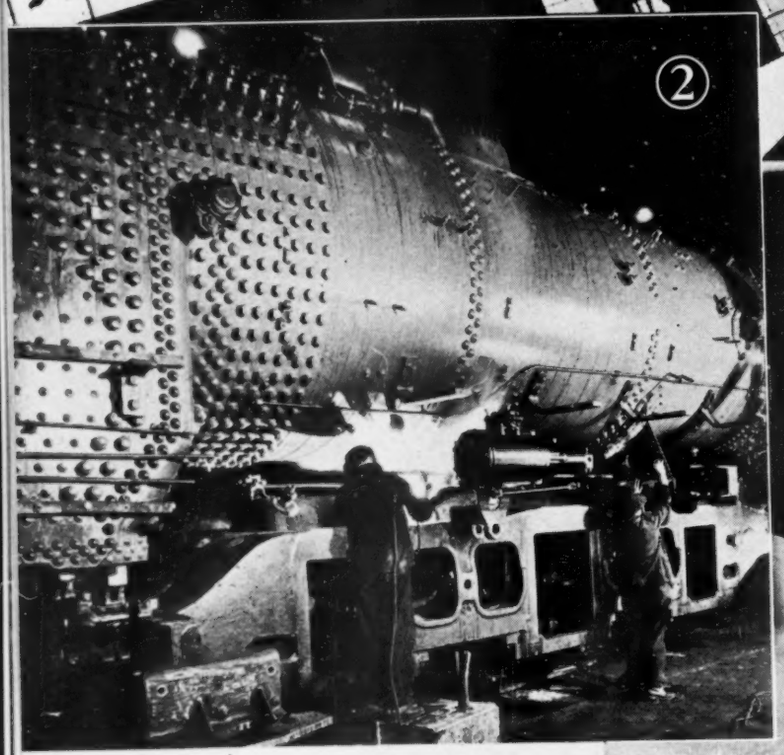
CHICAGO, ILLINOIS


New York
New Haven
Hartford
ILROAD
THE BALDWIN LOCOMOTIVE WORKS

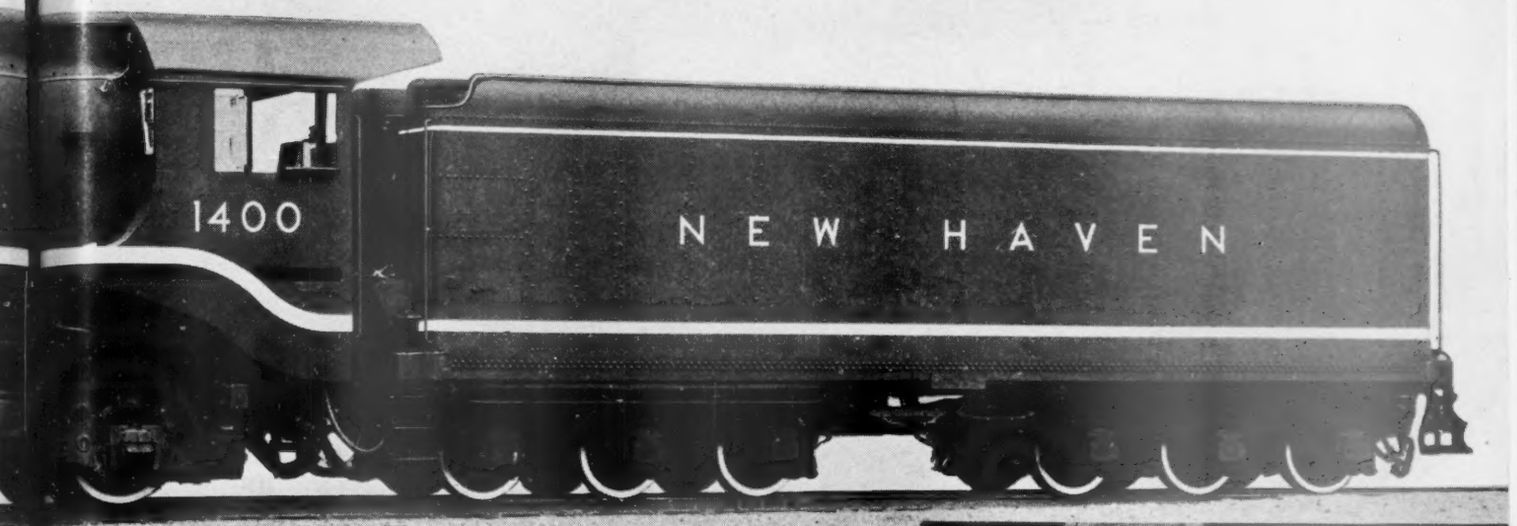




New York New Haven and Hartford RAILROAD



THE BALDWIN LOCOMOTIVE



THE SHORE LINE GOES

Streamline

The ten steam locomotives now being delivered to the New York, New Haven and Hartford Railroad, will be used in high-speed passenger service between New Haven and Boston.

It is confidently expected that each locomotive will make at least 125,000 miles per year.

As compared with the power now used in this service, the new locomotives will have the following advantages—

rated tractive force	+ 17%	potential horse power	+ 14.8%
boiler pressure	+ 42%	grate area	+ 30%
driving wheel diam.	+ 1.26%	steam per I. H. P.	— 6.4%

This means improved service, lower operating costs and less maintenance expense. One more example of the fact that—

It takes Modern Locomotives to make money these days!

1. Moving the boiler into position for mounting on the bed casting.
2. Boiler mounted on the cast-steel bed ready for the finishing operations.
3. Grinding a driving axle to close tolerances required by the roller bearings.
4. Welding splash plates in the tender tank.
5. An unusual view of the boiler showing the interior of the firebox.

WORKS • • • PHILADELPHIA

The New Haven  *Shore Line Type*

GENERAL SPECIFICATIONS

CYLINDERS
Diam. & Stroke ..... 22" x 30"
Valves ..... Piston, 11" diam.

BOILER
Type ..... Conical
Diameter, inside ..... 82 7/16"
Working pressure ..... 285 lb.
Fuel ..... Soft coal

FIREBOX
Material ..... Steel
Staying ..... Radial
Length ..... 132"
Width ..... 84 1/8"
Depth, front ..... 97 9/16"
Depth, back ..... 84 1/16"

TUBES

Diameter	5 1/2"	2 1/4"
Number	48	199
Length	18' 0"	18' 0"

HEATING SURFACE
Firebox ..... 260 sq. ft.
Combustion chamber ... 81 sq. ft.
Tubes ..... 3338 sq. ft.
Thermic syphons ..... 139 sq. f
Total ..... 3815 sq. ft.
Superheater ..... 1042 sq. ft.
Grate area ..... 77.1 sq. ft.

DRIVING WHEELS
Diameter, outside ..... 80"
Diameter, center ..... 72"
Journals, main—
13" diam., Roller bearing
Journals, others—
11" diam., Roller bearing

ENGINE TRUCK WHEELS
Diameter, front ..... 36"
Journals ..... Roller bearing unit
Diameter, back ..... 42"
Journals ..... Roller bearing unit

WHEEL BASE
Driving ..... 14' 0"
Rigid ..... 14' 0"
Total engine ..... 40' 1"
Total engine and tender ..... 84' 10"

WEIGHT—*In Working Order*
On driving wheels ..... 193,000 lb.
On truck, front ..... 71,500 lb.
On truck, back ..... 100,800 lb.
Total engine ..... 365,300 lb.
Total tender ..... 332,000 lb.

TENDER
Wheels, number ..... Twelve
Wheels, diameter ..... 36"
Journals ..... 6 1/2" x 12"
Tank capacity ..... 18,000 U.S. gal.
Fuel capacity ..... 16 tons

Tractive force ..... 44,000 lb.
Service ..... Passenger

Construction No. 61,964 Drawing No. 1

Railroad Co.'s Class I-5

Equipped with Type A superheater, turbo-injector, stoker, three thermic syphons, power reverse, one piece cast steel locomotive bed with integral cylinders, and air brake on all driving, back truck and tender wheels, with one 8 1/2" cross-compound pump.

THE BALDWIN LOCOMOTIVE WORKS

ONE-THIRD LESS STEEL NEEDED WITH COR-TEN CONSTRUCTION.

The outer sheets and dasher plates of the water tanks for the new New Haven streamline locomotives are built of USS COR-TEN ¼" thick, replacing usual construction ⅜" thick. Outer sheets are riveted throughout and in addition are electric arc-welded to the cast steel water bottoms. And because COR-TEN has a yield point of almost twice that of mild steel—and in addition has greater resistance to corrosion, this light-weight construction will give equal strength and service life.

USS

U·S·S COR-TEN

...increases strength

...reduces weight

...gives added resistance to corrosion

USED in the construction of the tender tanks of the ten streamlined locomotives recently completed for the New York, New Haven & Hartford R. R., COR-TEN plays an important part in improving the performance of these new power units.

The use of USS COR-TEN by the New Haven is not new.

Two years ago USS High Tensile steels—low cost, high strength steels—made their first appearance in New Haven equipment. Their use in fifty streamlined ultra modern light-weight coaches placed in service early in 1935, reduced the weight of these cars approximately 30,000 pounds each. This light-weight construction included USS MAN-TEN center sills and MAN-TEN pressed steel draft sills, COR-TEN side sills, floor stringers and sub-floor, and all COR-TEN super-structure and roof.

Late in 1936, fifty more of these coaches, 26% lighter than conventional construction, went into service. More are on the way.

USS COR-TEN was used in the new locomotive tenders because the engineers knew what this steel would do. They have watched its performance—have seen it justify every claim made for it.

Find out how COR-TEN and other USS High Tensile Steels—USS Stainless and USS MAN-TEN—can be economically applied to modernize your equipment, make it lighter, stronger, more enduring, less expensive to operate.

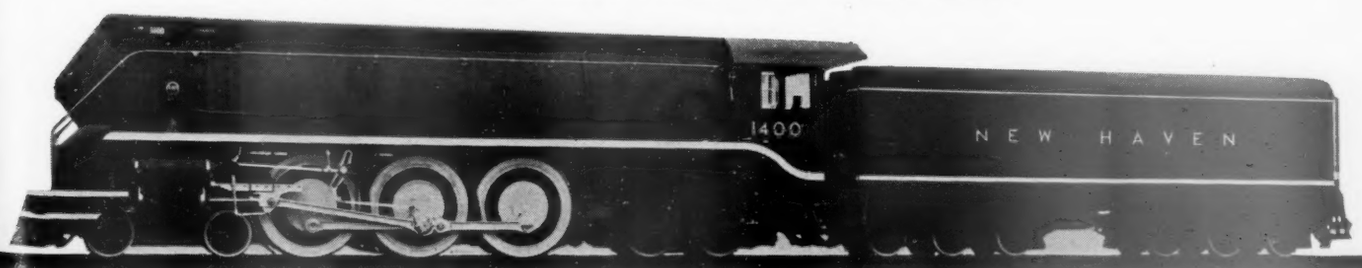
Full information will be furnished on request, by the nearest district sales office of a subsidiary company, or by the Railroad Research Bureau, United States Steel Subsidiaries, Frick Building, Pittsburgh, Pa.

U·S·S HIGH TENSILE STEELS

AMERICAN STEEL & WIRE COMPANY, *Chicago and New York* · CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago* · COLUMBIA STEEL COMPANY, *San Francisco* · NATIONAL TUBE COMPANY, *Pittsburgh* · TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham.*

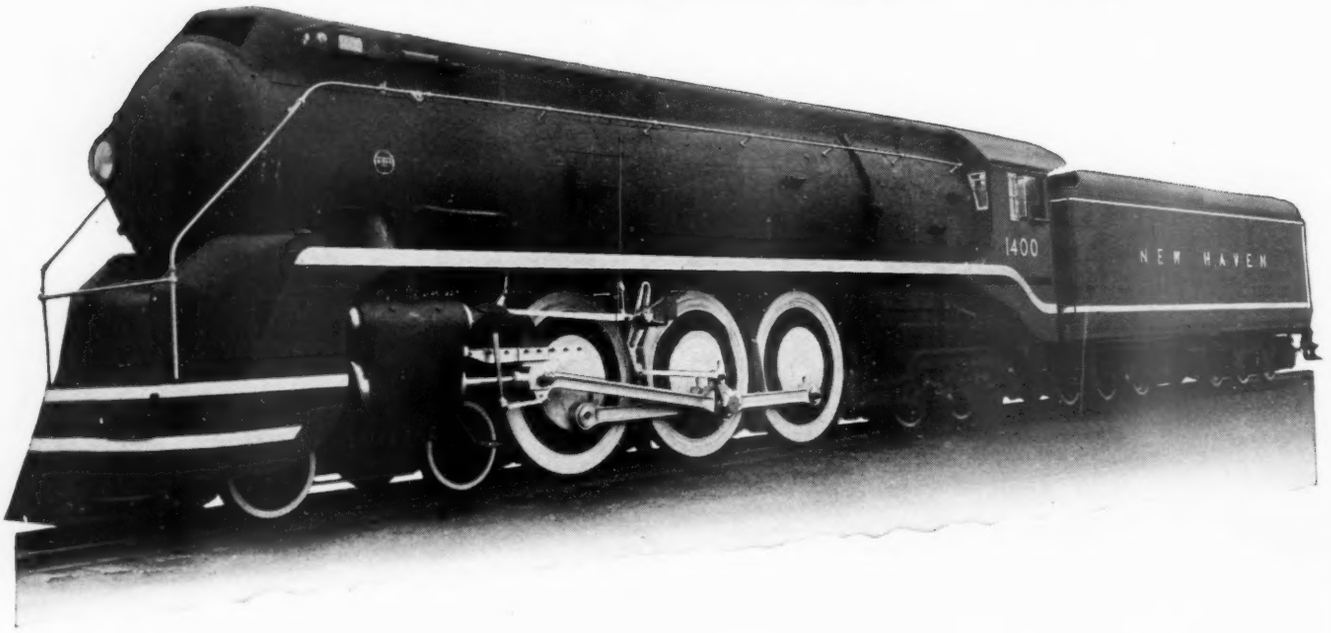
COLUMBIA STEEL COMPANY, San Francisco, *Pacific Coast Distributors*

UNITED STATES STEEL PRODUCTS COMPANY, New York, *Export Distributors*



UNITED STATES STEEL

The New Haven  *Shore Line Type*



NEW MODERN POWER

. . . for the New Haven

These Modern 4-6-4 Type Locomotives, now being delivered to The New York, New Haven and Hartford Railroad Company by Baldwin Locomotive Works, are splendid examples of high-speed, high-capacity passenger train power.

On such power, with full steaming capacity essential to maintaining fast schedules, stoker firing is essential.

These locomotives are fired by Standard Stokers.

THE STANDARD STOKER COMPANY, INC.

NEW YORK • CHICAGO • ERIE

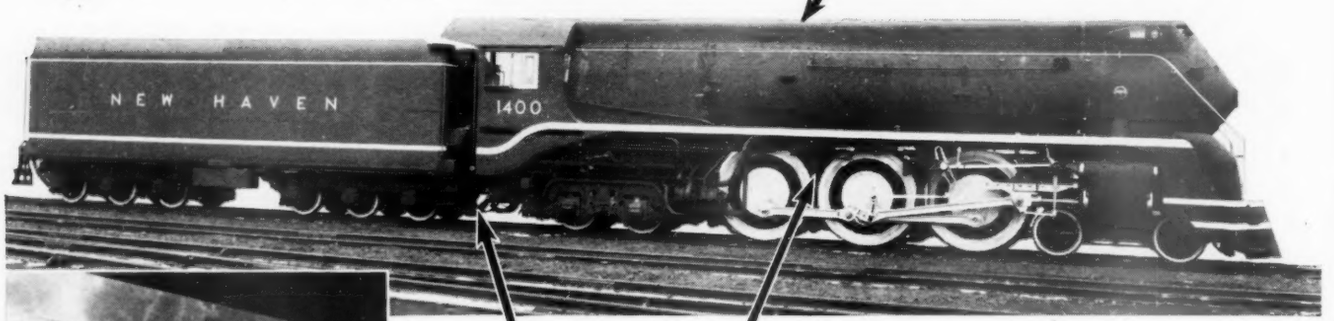
The New Haven  *Shore Line Type*

NEW HAVEN'S 10 *Streamliners*

all-BARCO-EQUIPPED

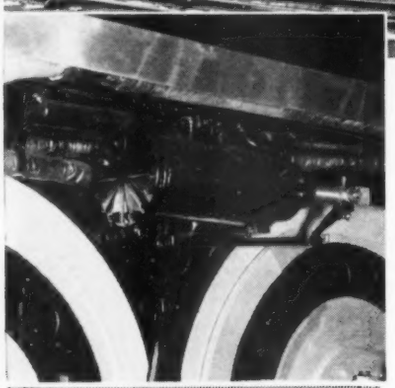
for Safety and Economy

BARCO LOW WATER ALARM



BARCO M-1 POWER REVERSE GEAR

BARCO 3-V STEAM AND AIR CONNECTIONS



View of BARCO Type M-1 Power Reverse Gear on New Haven Streamliner. Exceptionally fine adjustment and accurate maintenance of point of cut-off with extremely low maintenance cost . . . due to the BARCO Dual Control operating valve and outboard integral piston rod bearing . . . make this unit the choice of railroads everywhere.

BARCO

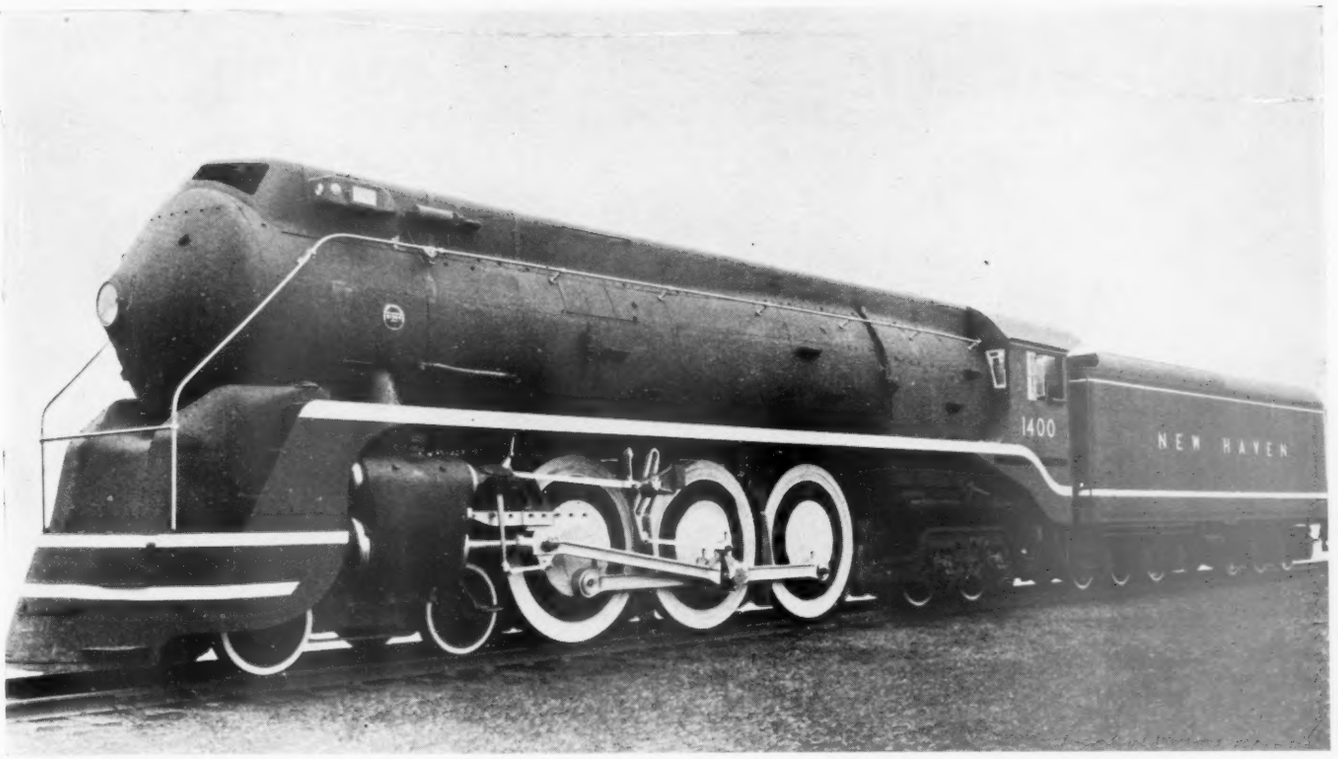
● Each of these ten locomotives . . . engineered to set new high standards for speed, safety and economy . . . is equipped with the following BARCO safety and economy devices:

(1) BARCO Low Water Alarm; (2) BARCO TYPE M-1 Power Reverse Gear; (3) BARCO 3V Metal Air and Steam Connections between Locomotive and Tender; (4) BARCO Joints in Piping to Auxiliary Devices; and (5) BARCO Automatic Smoke Box Blower Fittings.

The widespread choice of BARCO Equipment for these important functions in the latest types of locomotives is convincing evidence of the important part these time-tested units play in *continuous* efficient and economical operation.

BARCO MANUFACTURING COMPANY
8011 W. WINNEMAC AVENUE, CHICAGO, ILLINOIS

The New Haven  *Shore Line Type*



More MODERN LOCOMOTIVES *with the* No. 8 ET BRAKE EQUIPMENT

The New Haven road is to be congratulated upon its progressive step in acquiring new streamlined motive power... These ten modern locomotives not only present an attractive appearance, but they are designed to improve transportation service by hauling longer trains of streamlined coaches having up-to-date appointments... In keeping with other noteworthy elements of these locomotives is the Air Brake—our No. 8 ET Equipment, designed to provide the maximum effectiveness and efficiency of train control. Its merits are being more and more demonstrated as additional modern locomotives such as these go into service.

WESTINGHOUSE AIR BRAKE CO.

GENERAL OFFICE AND WORKS « » WILMERDING, PENNSYLVANIA

The New Haven  *Shore Line Type*

BIG BEARINGS FOR 80" DRIVERS

WHEN the New Haven Railroad specified bearings for ten 4-6-4 high-speed, streamlined passenger locomotives, they found it both economical and practical to install antifriction bearings on all journals.

By selecting SKF Bearings for all drivers of five of these Deluxe locomotives, they made certain of a large, self-adjusting, self-aligning, self-contained, two-row spherical roller bearing on each journal.

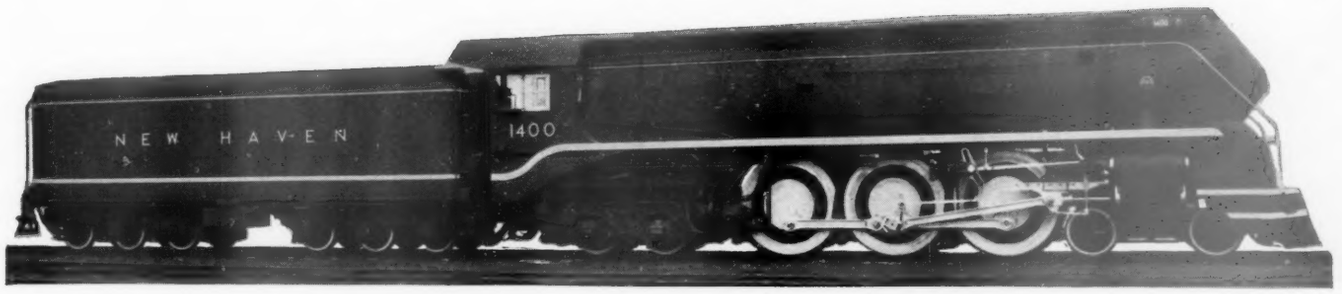
The New Haven Railroad is assured of the same dependability that SKF Bearings have given to drivers since SKF pioneered this application in 1930. In railroading, as in no other industry in the world, performance is the thing that counts.

SKF INDUSTRIES, INC., Front Street & Erie Avenue, Philadelphia, Penna.

3855

The New Haven  *Shore Line Type*

VITAL PARTS



on the NEW HAVEN STREAMLINERS

TO insure maximum sustained efficiency, economical fuel consumption, and low maintenance, HUNT-SPILLER *Air Furnace* GUN IRON was applied to these streamlined locomotives for the following Vital Parts:

Cylinder Bushings — **Valve Bushings**
Valve Bull Rings — **Duplex Sectional Packing Rings**
Outer Rod Bushings and Steam Pipe Joint Rings.

H S G I Vital Parts on modern power are highly significant —their performance in service is recognized as a contributing factor to economical operation.

H S G I
Reg. U. S. Trade Mark
Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings
Parts Finished For Application
Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

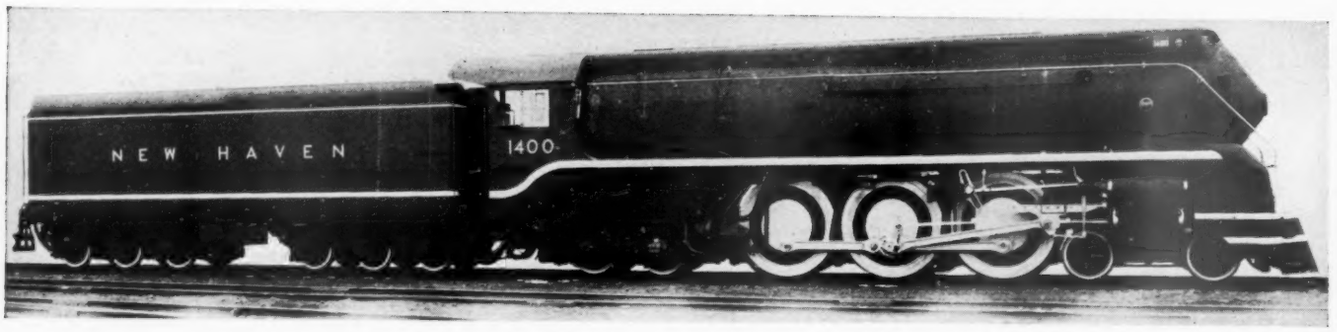
HUNT-SPILLER MFG. CORPORATION
V. W. Ellet Pres. & Gen. Mgr. / E. J. Fuller Vice-President

Office & Works
383 Dorchester Ave. South Boston, Mass.
Canadian Representative: Joseph Robb & Co., Ltd., 5575 Cote St. Paul Rd., Montreal, P.Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER *Air Furnace* GUN IRON

The New Haven  *Shore Line Type*

STANDARD STEEL *on the* NEW HAVEN



10 new Baldwin-built locomotives have been delivered to the New Haven Railroad, all 10 of which are equipped with

STANDARD

Tender Wheels and Axles; Locomotive Driving Axles, Piston Rods, Crank Pins, Connecting Rods, Driving Wheel Centers and Miscellaneous Castings.

STANDARD STEEL WORKS COMPANY

SUBSIDIARY OF THE BALDWIN LOCOMOTIVE WORKS

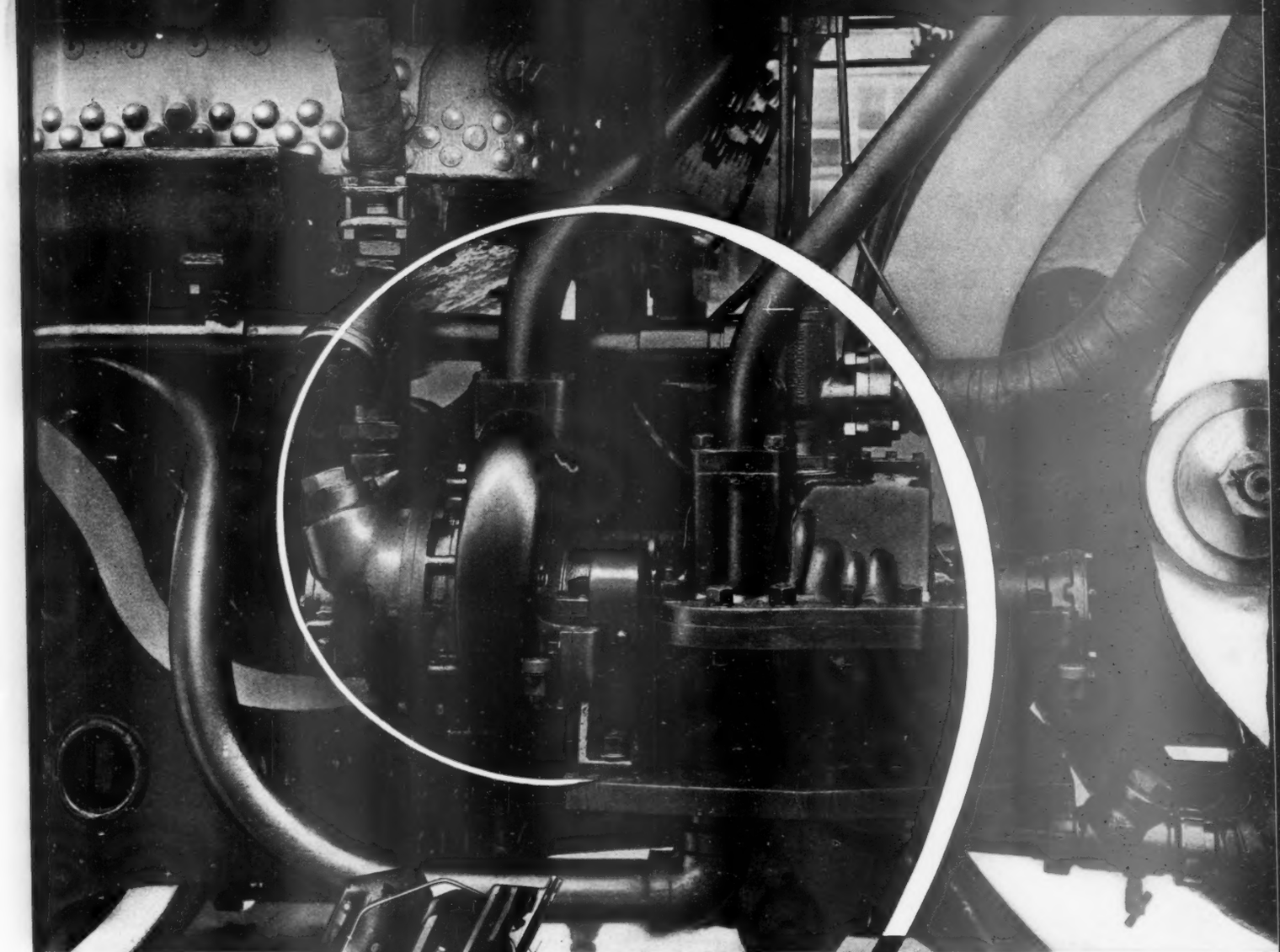
GENERAL OFFICES & WORKS: BURNHAM, PA.

CHICAGO
NEW YORK

ST. LOUIS
SAN FRANCISCO

PORTLAND
PHILADELPHIA

HANCOCK TURBO-INJECTOR



THE FEED WATER HEATER OF TOMORROW

Here it is!

The Hancock Turbo-Injector provides a light weight, highly efficient means of preheating locomotive feed water with exhaust steam from the locomotive cylinders, and for injecting this preheated feed water into the locomotive boiler.

It consists of a steam turbine, a four stage centrifugal pump, a condensing chamber, an operating valve and incidental valves and fittings, which make its operation practically automatic.

A pressure gauge and a dial thermometer are furnished as part of the equipment. The thermometer gives the engineman or road foreman, at all times, an indication of the temperature of the water entering the boiler. The pressure gauge indicates the pressure of the feed water in the feed pipe when the Turbo-Injector is in operation.

The Hancock Turbo-Injector effects a very definite and substantial saving in fuel and water.

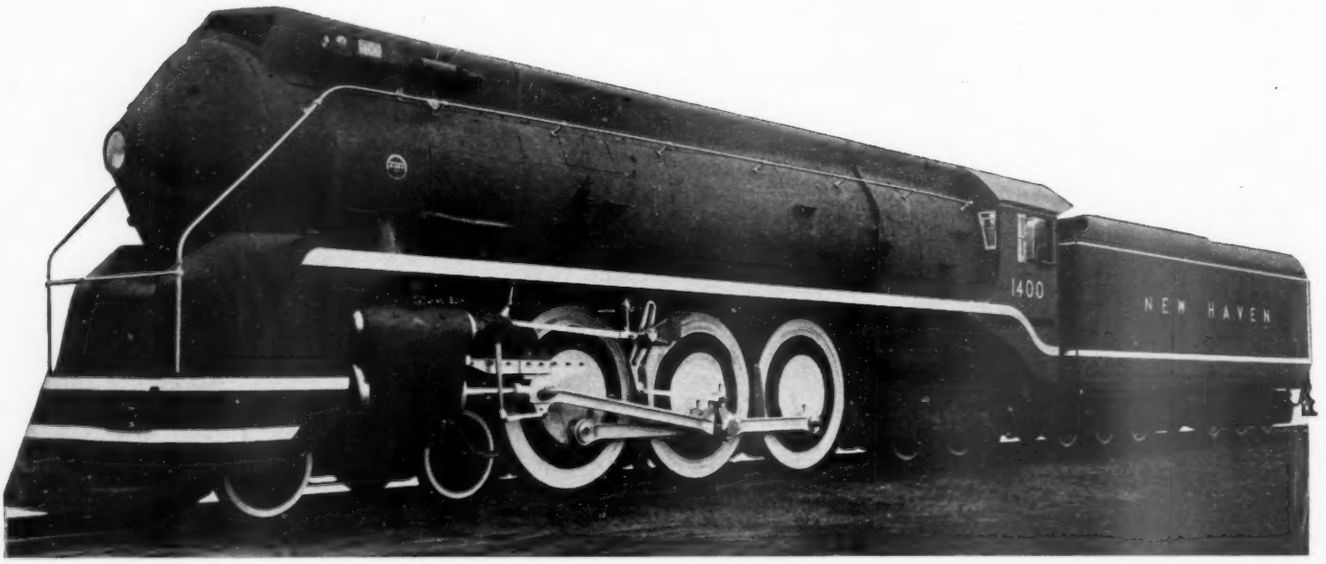
No new road locomotive would be modern without a Hancock Turbo-Injector. As for existing power, it goes without saying it will be made a great deal more efficient by being equipped with this feed water heater. Further detailed information will be gladly mailed on request. Write to

CONSOLIDATED ASHCROFT HANCOCK CO., INC.
RAILWAY SALES DIVISION, CHRYSLER BUILDING, NEW YORK

Makers of Hancock Inspirators • Ashcroft American Gauges • Hancock Valves
Hancock Boiler Checks • Hancock Whistles • Consolidated Safety Valves

The New Haven  *Shore Line Type*

DRIVING AXLES ON TIMKEN BEARINGS



All driving axles of five of the new type 4-6-4 streamlined steam locomotives built by Baldwin for the New York, New Haven and Hartford Railroad are on TIMKEN Bearings.

Pioneered by The Timken Roller Bearing Company, bearing installations of this kind are rapidly approaching standard practice.

TIMKEN Bearings have been specified for all driving axles of 212 new steam locomotives now under construction or on order. In addition, more and more locomotives are being equipped with TIMKEN Bearings in the engine trucks, trailer trucks and tender trucks.

Close to 100% of the steam locomotives purchased so far this year which will be equipped with roller bearings on all driving axles will be equipped with TIMKEN Bearings.

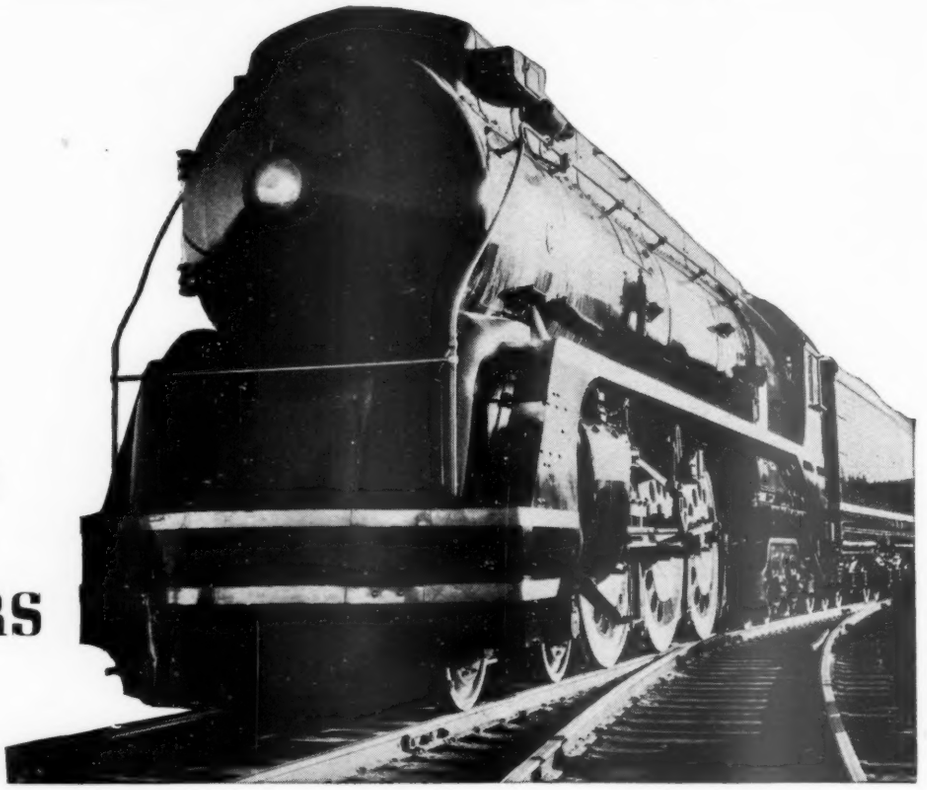
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

TIMKEN
RAILWAY ROLLER BEARINGS

The New Haven  *Shore Line Type*

10 NEW HAVEN STREAMLINERS HAVE



CARBON-VANADIUM STEEL FORGINGS . . .

Speed . . . safety . . . dependability — three vital factors — were safeguarded by the designers of the New Haven's streamlined steam locomotives. Carbon-Vanadium steel, standard on the New Haven for 15 years, was specified for the following forgings on all ten streamlined locomotives built by Baldwin:

MAIN RODS SIDE RODS AXLES
CRANK PINS PISTON RODS

The elastic limit, fatigue and shock-resisting qualities of normalized and tempered Carbon-Vanadium Steel Forgings are considerably higher than those of carbon steel forgings of the same section. These higher properties not only provide an increased factor of safety but also make possible a reduction in the weight of reciprocating parts.

Write for a copy of "Vanadium Steels for Locomotive and Car Construction."

•

VANADIUM CORPORATION OF AMERICA
420 LEXINGTON AVENUE, NEW YORK, N. Y.

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories, Bridgeville, Pa.

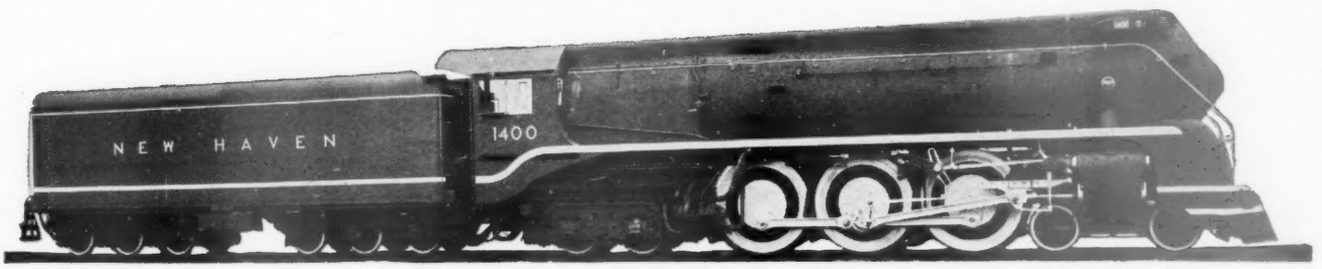
Vanadium Steels

FOR STRENGTH • TOUGHNESS • DURABILITY

METALS VANCORAM ALLOYS

FERRO ALLOYS
of vanadium, silicon, chromium, and titanium, produced by the Vanadium Corporation of America, are used by steel makers in the production of high-quality steels.

The New Haven  *Shore Line Type*



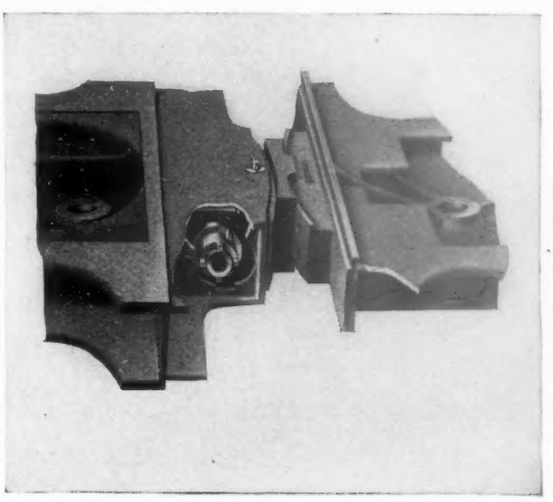
POWER
designed for
HIGH SPEED DE LUXE SERVICE

On these ten 4-6-4 Type Streamlined Passenger locomotives built by Baldwin for The New York, New Haven and Hartford Railroad Company, the Type E-2 Radial Buffer between engine and tender will aid in smooth operation and improve the riding of the locomotive.

The Franklin Type E-2 Radial Buffer maintains a pre-determined spring-held, frictional resistance between engine and tender that avoids all slack, yet permits free movement in any direction between engine and tender units.

This controlled frictional resistance dampens all oscillation and cushions and absorbs the shocks.

By avoiding slack and jar it protects against excessive stress on drawbar and pins, increases safety of operation and adds to passenger comfort by improving the smoothness of the entire train movement.



Franklin Type E-2 Radial Buffer

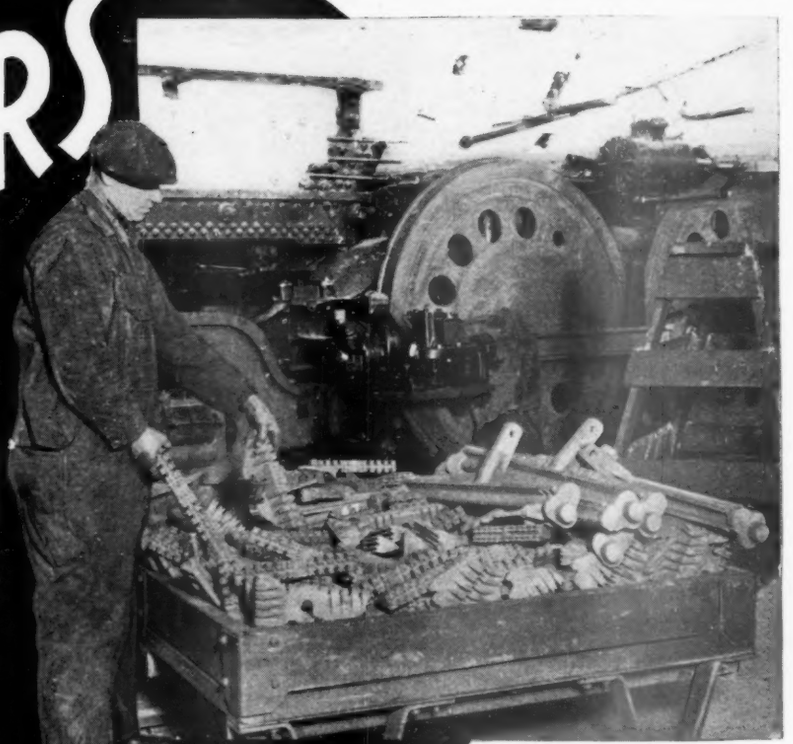
Because material and tolerances are just right for the job, genuine Franklin repair parts give maximum service life.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

The New Haven  *Shore Line Type*

FIREBARS on the New Haven Streamlined Power



Application of FIREBARS to one of the New Haven Streamlined Locomotives in the erecting shop of The Baldwin Locomotive Works.

"BETTER FIRES" are effecting unusual economies on the New York, New Haven and Hartford Railroad. All active power is being equipped with FIREBARS.

Application of FIREBARS to the new streamlined 4-6-4's will add ten more locomotives to the large number of economical fuel consumers and efficient revenue producers operating on this road for a minimum maintenance cost.

WAUGH FIREBAR BETTER FIRES

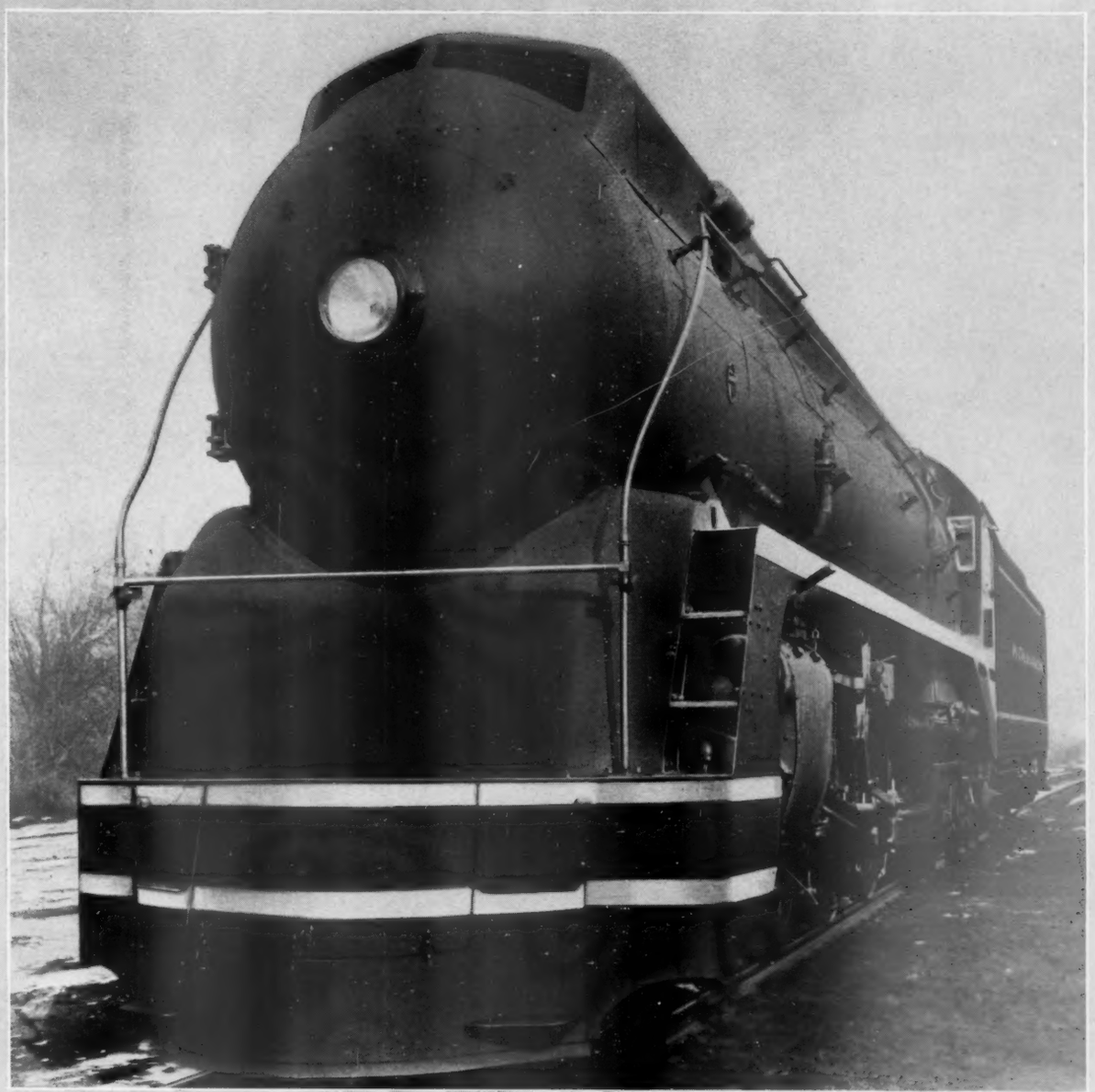
FIREBAR DIVISION

Waugh Equipment Company

New York Chicago St. Louis

Canadian Waugh Equipment Company, Montreal, Que.

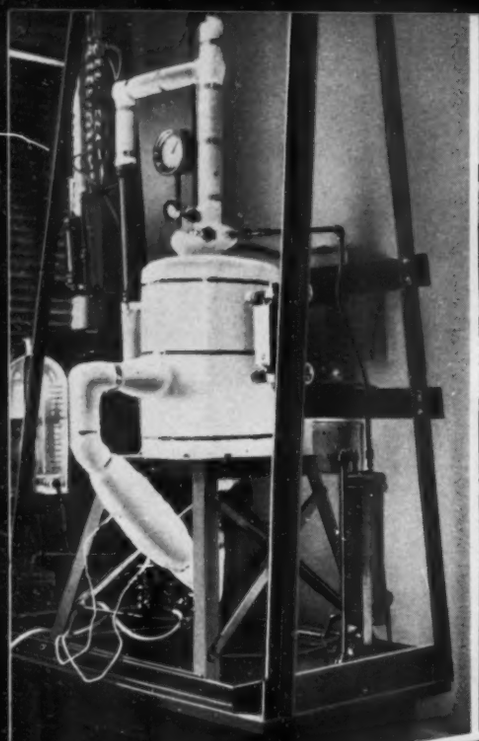
Nicholson Thermic
SYPHONS



Ten 4-6-4 Streamlined Locomotives going into service on the Shore Line of the New York, New Haven and Hartford Railroad between Boston and New Haven are each equipped with three Nicholson Thermic Syphons. The Syphons add 139 sq. ft. of heating surface in the zone of most intense direct and radiant heat. 736 Syphons have been installed in 292 locomotives on this railroad.

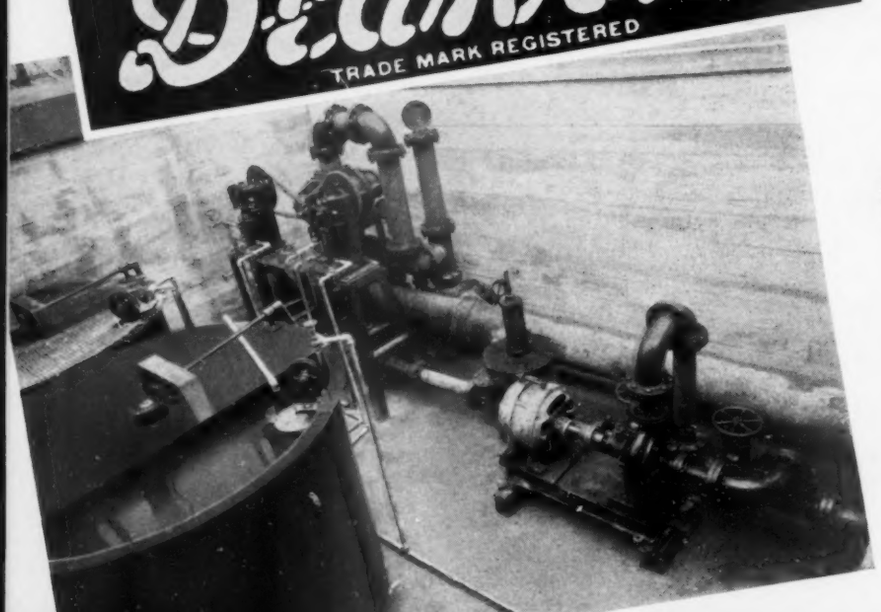
Syphons Are Applied for Greater Boiler Horse-Power, with Minimum Weight • Fuel Economy • Circulation Safety from Boiler Explosion

LOCOMOTIVE FIREBOX COMPANY
NEW YORK CHICAGO MONTREAL



Dearborn

TRADE MARK REGISTERED



COORDINATED WATER TREATING SERVICE

THE Dearborn Organization renders a coordinated service which overcomes locomotive feed water problems with maximum economy.

Following complete analysis of water samples in Dearborn Laboratories, Dearborn Chemists establish the correct combinations of chemicals to overcome the conditions found—whether scale, corrosion or foaming. Their selections are based on the most modern methods and materials, their judgment backed by years of scientific research and practical experience.

These combinations of materials are manufactured by specially designed equipment into forms most convenient for use, under direct Laboratory supervision, assuring highly concentrated products with uniformity of structure.

Dearborn Engineers survey the water stations and operating conditions. They plan the method of introducing these Dearborn Treating Materials to the water in correct quantities without waste, either by means of automatic treating equipment or by application direct to tenders or boilers.

Dearborn Service Engineers, in permanently assigned territories, visit wayside stations and round houses periodically to make necessary tests and treatment adjustments, if required.

Thus the Dearborn Company coordinates the scientific water treating service which saves large sums annually for Dearborn railroad customers. This superior service we would like to demonstrate to you.

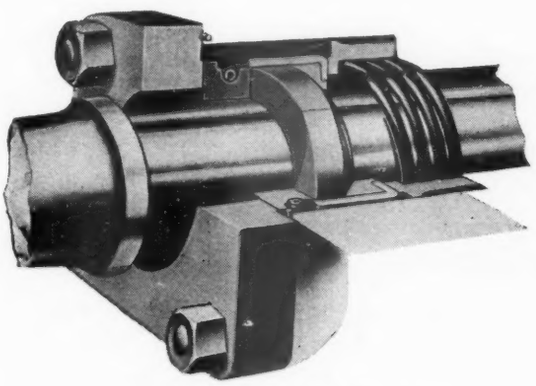
DEARBORN CHEMICAL COMPANY

310 South Michigan Avenue, CHICAGO
205 East 42nd Street, NEW YORK
2454 Dundas Street, West, TORONTO

The New Haven  *Shore Line Type*

KING *Metallic* PACKING

On All Types of Modern Power



King Piston Rod Packing

ON Streamliners—heavy duty articulated locomotives—switchers and on other types of modern and existing power KING Metallic Packing is contributing to the efficiency and economy of operation.

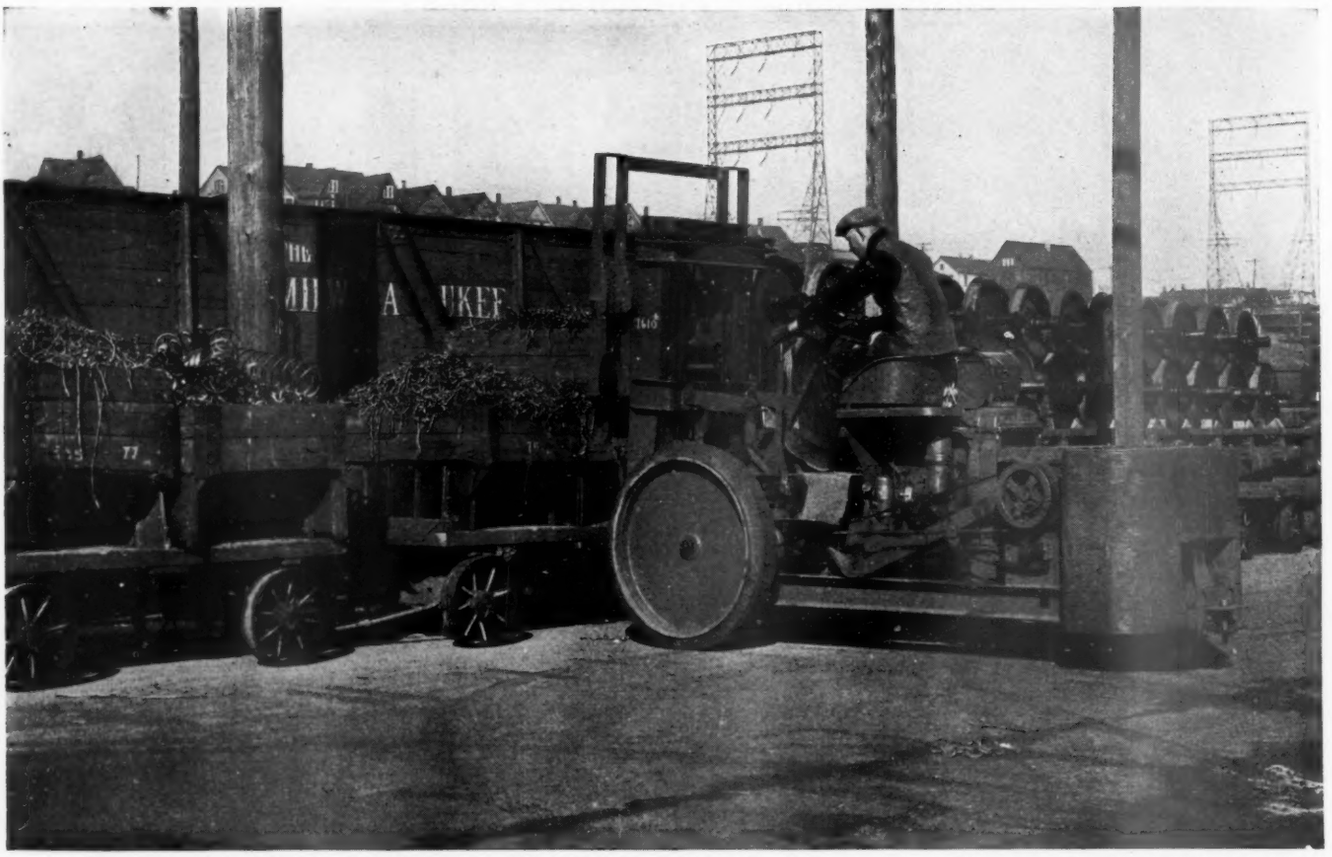
Applications on the piston rods and valve stems of some of the highest pressure locomotives are highly significant. One unit carries a working pressure of 500 lb.

Steam tight performance and long service between renewals under the severest of operating conditions are the chief reasons for the constantly increasing number of locomotives equipped with KING Metallic Packing.

It is effecting economies on many leading railroads.

THE U. S. METALLIC PACKING CO.
Philadelphia Pennsylvania

KING PRODUCTS



The International I-12 Tractor with this lift truck built on it, readily picks up, transports, and lays down loads of various kinds. It is shown here removing loaded skids from trailers in the Milwaukee shops of the Chicago, Milwaukee, St. Paul & Pacific.

An Efficient Materials-Handling Unit

International I-12 with Lift Truck

A real help in solving materials-handling problems is offered by the International I-12 Industrial Tractor equipped with lift truck shown above.

In the Milwaukee, Wis., shops of the Chicago, Milwaukee, St. Paul & Pacific, this outfit is used by the stores department to move materials. It picks up loaded skids weighing approximately 2,000 pounds each, puts them on trailers, tows the loaded trailers to the shipping and receiving departments, and unloads the trailers. Incoming supplies are loaded on the trailers and distributed to the proper departments. Each International has a scheduled circuit to travel every morning and afternoon.

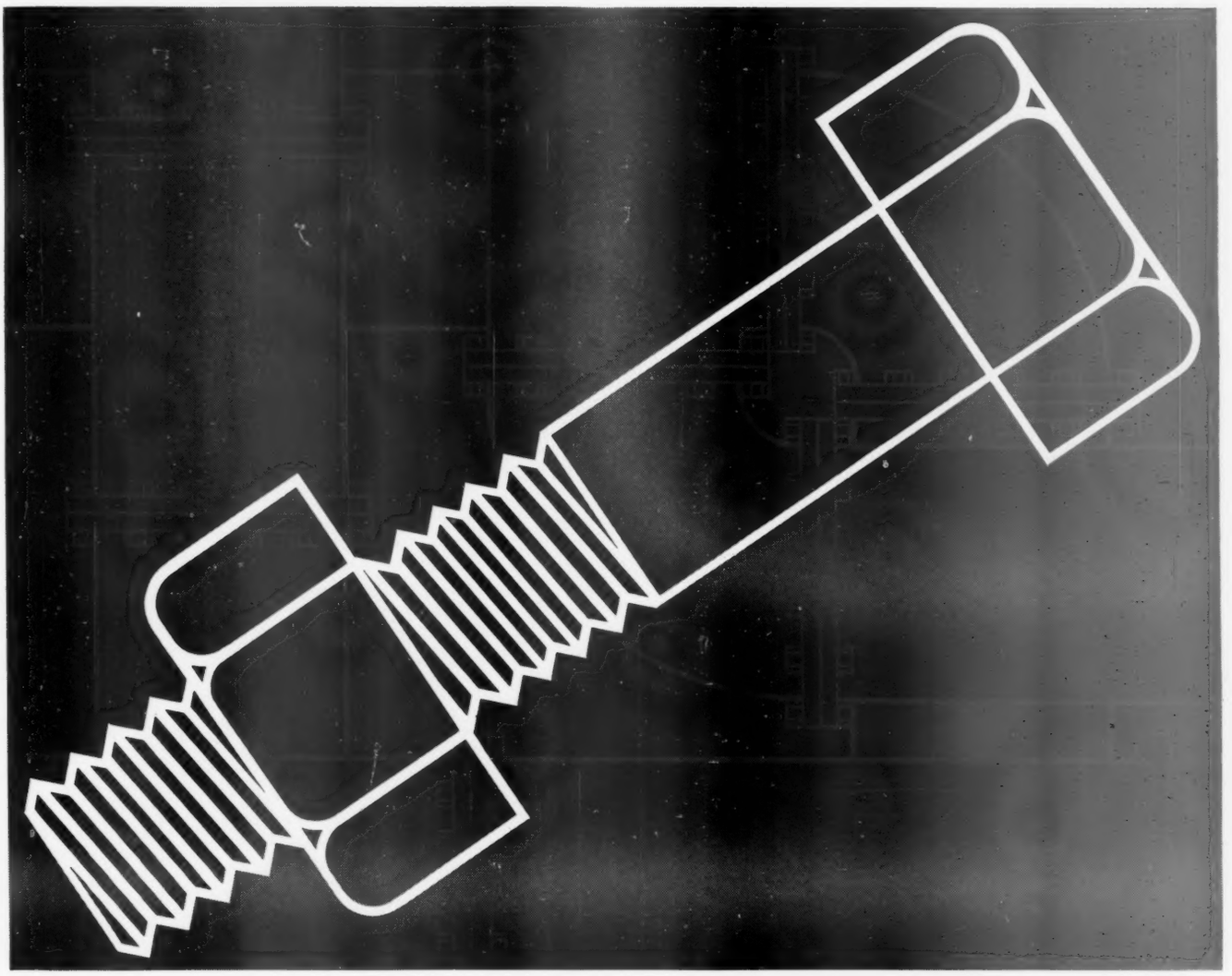
Investigate the International I-12 for your work. It is small and compact for working in close quarters, and it is noted for its operating economy. It works alone or in combination with equipment built around it. The nearest International industrial dealer, or Company-owned branch, will give you complete information on this tractor or other industrial wheel and crawler-type tractors in the International line.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL HARVESTER

Index to Advertisers

March 27, 1937



"Take care of the pennies . . ."

ONE bolt is small, and comparatively inexpensive—either to buy or to make. But—bolts "in the mass" can easily represent a very considerable outlay. The saving of even a small fraction of a cent in the production cost may come to a substantial sum in the aggregate.

For example: One concern has standardized on Chrome-Moly (SAE 4140) bolts because they are easier to machine—resulting in savings on both tool expense and machining time. In addition, their improved physical properties assure better service performance.

Moly steels are cutting production costs throughout industry because they are more economical to fabricate—whether the process be heat-treating, forging, carburizing, or machining. . . . They also impart to finished products higher quality, resulting in better service.

Our free technical book, "Molybdenum," will prove useful to engineers and production heads interested in cost cutting and product improvement. Our monthly news-sheet, "The Moly Matrix," keeps readers informed on Moly developments. Consult our laboratory when ferrous problems get tough. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

CONVERTING DOUBLE TRACK to SINGLE-TRACK OPERATION

"Signaling: Many lines would have been built as single lines if the modern methods of signaling had been available when they were originally constructed."*

In the past few years there has been a steady, if inconspicuous, program to remove second track where an efficiently signaled single-track line can safely accommodate the present and probable future traffic in order to eliminate unnecessary operating and maintenance charges.

Studies by the Signal Section of the Association of American Railroads and the American Railway Engineering Association of the six projects converting double track to single-track operation, indicate that in addition to reducing signal maintenance and operating costs, there has been a saving on the cash expenditure of from 57 to 387 per cent. annually on the 305.4 miles of track converted to single-track operation.

*From paper by E. J. H. Lemon, Vice President of the London, Midland & Scottish Railway, England, 1932.

UNION SWITCH & SIGNAL COMPANY
Swissvale, Pennsylvania

GENERAL RAILWAY SIGNAL COMPANY
Rochester, N. Y.

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HISTORY IN THE MAKING

Of the 183,784 miles of block-signaled passenger lines operated in the United States in 1936, 80,380 miles were single-track lines.